C21.5 : 944/2

Vol. 944 Number 2

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

March 9, 1976

REC
MIAMI
LIB
MAR
DEP

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

March 9, 1976 Volume 944 Number 2

CONTENTS

	Page
Patent and Trademark Notices	
Registration to Practice	510
Patent Suits	510
Second Trial Voluntary Protest Program	510
Patent Notices	
Certificates of Correction for the Week of March 9, 1976	513
Dedications	513
Disclaimers	513
Condition of Patent Applications	514
Patent Applications Published Under Second Trial Voluntary Protest Program	
General and Mechanical	515
Chemical	526
Electrical	538
Reissue Patents Granted (28,730)	544
Plant Patents Granted (3,836)	547
Patents Granted	
General and Mechanical (3,942,191)	549
Chemical (3,942,946)	800
Electrical (3,943,271)	885
Design Patents Granted (239,061)	987
Index of Applicants and Assignees of Published Applications	PI 1
Classification of Published Patent Applications	PI 4
Index of Patentees	PI 11
Index of Reissue Patentees	PI 53
Index of Plant Patentees	PI 53
Index of Design Patentees	PI 53
Classification of	
Patents (Including Reissues)	PI 55
Designs and Plants	PI 58
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 59
Designs and Plants	PI 61

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENTS SECTION), issued weekly, subscription $342.20 per annum, foreign mailing $85.55 additional; single copies $6.60 each.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly, subscription $88.40 per annum, foreign mailing $22.10 additional; single copies $1.70 each.

CIRCULARS OF GENERAL INFORMATION concerning PATENTS, price 60 cents each.

CIRCULARS OF GENERAL INFORMATION concerning TRADEMARKS, price 50 cents each.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS and DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before April 2, 1976.

Abbott, Frank L., 3805 Kanawha St. NW., Washington, D.C. 20015
Citrin, Harvey, 131 Willoughby Ave., Brooklyn, N.Y. 11205
DeCesare, Jim L., 14102 Kiamesha Ct., Houston, Tex. 77069
Foster, Richard T., 1900 S. Eads St., #624, Arlington, Va. 22202
Gillespie, Ted C., 3219 Middlesex, #A, Toledo, Ohio 43606
Gluck, Richard E., 1817 N. Quinn St., Arlington, Va. 22209
Libman, George H., 2107 Golf Course Dr., Reston, Va. 22091
Martin, Larry H., 6844 Dina Leigh Ct., Springfield, Va. 22153
Partington, Gary W., 130 De La Barre, #1402, Longueuil, Quebec, Canada
Pruitt, John E., 405 Amelia St., Fredericksburg, Va. 22401
Ribando, Curtis P., 346 Country Club Rd., Chicago Heights, Ill. 60411

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,919,990, Podlesak, Kraft and Miller, METHOD OF CONTINUOUSLY PRODUCING PACKAGED UNITS, **filed** May 14, 1974, D.C., E.D. Wis. (Milwaukee), Doc. 74–187, *Kraftco Corporation* v. *Lake to Lake, Inc.* Stipulation and order filed dismissing action, Apr. 25, 1975. **Same, filed** Sept. 3, 1974, D.C., E.D. Wis. (Milwaukee), Doc. 75–371, *Kraftco Corporation* v. *Haysseen Manufacturing Company.* Stipulation and order dismissing action with preudice, May 9, 1975.

2,941,172, W. T. Sutton, Jr., ELECTRICAL WINDING CONSTRUCTION, **filed** June 20, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c2022, *Coilcraft, Inc.* v. *TRW, Inc.* Cause hereby dismissed with preujdice, Nov. 17, 1975.

3,002,252, Brause and Burns, PACKAGE OF OUTER UNSTERILE AND INNER STERILE COVERS FOR ENCLOSING A SUBSTANTIAL PORTION OF AN OBJECT HAVING AN UNSTERILE SURFACE, **filed** June 20, 1974, D.C., E.D. Wis. (Milwaukee), Doc. 74,255, *La Barge, Inc.* v. *Will Ross, Inc. and D. F. Labs, Inc.* Consent decree entered, Oct. 21, 1974.

3,144,108, H. C. Reynolds, IMPACT WRENCH WITH SEPARATE INERTIA MEANS, **filed** Dec. 1, 1975, D.C., S.D. Fla. (Miami), Doc. 75–2772–C–JLK, *Ingersoll-Rand Company* v. *Rockwell International Corp. and Florida Pneumatic Manufacturing Corp.*

3,160,440, J. T. Gelardi, CONTINUOUS TWISTER AND FEEDER MECHANISM FOR BRUSH MACHINES OR THE LIKE, **filed** Dec. 4, 1975, D.C., E.D. Pa. (Philadelphia), Doc. 75–3502, *American Technical Industries, Inc.* v. *Marathon Manufacturing Company.*

3,218,588, J. G. Badger, TELEVISION TUNER; **3,842,683,** A. A. Valdettaro, UHF TUNER ARRANGEMENT, **filed** Nov. 18, 1975, D.C.N.J. (Newark), Doc. 75–1981, *Mitsumi Electronics Corporation* v. *Sarkes Tarzian, Inc.*

3,437,149, Cugini and Jeannerett, CABLE FEED-THROUGH MEANS AND METHOD FOR WELL HEAD CONSTRUCTIONS, **filed** Dec. 3, 1975, D.C., S.D. Tex. (Houston), Doc. CA 75–H–2044, *Seaboard Pipe & Equipment Co.* v. *Gray Tool Company, Boston Insulated Wire and Cable Co., and John Zackrison.*

3,474,479, H. J. Girard, PIPELINE CLEANING DEVICE, **filed** Feb. 28, 1973, D.C., S.D. Tex. (Houston), Doc. CA 73–H–272, *Harry J. Girard* v. *Polly-Pig By Knapp, Inc.* Order action dismissed with prejudice, except that defendant shall not be precluded in the future from contesting validity or infringement of said patent, Dec. 5, 1975.

3,483,169, Case and Case, POLYESTER-POLYETHERS AND PROCESS OF PREPARING THE SAME; **3,502,601,** Same, NOVEL POLYURETHANES AND PROCESSES OF PREPARING THE SAME, **filed** Dec. 5, 1975, D.C. Mass. (Boston), Doc. CA 75–5033–T, *Leslie C. Case* v. *BASF Wyandotte et al.*

3,502,601. (See 3,483, 169.)

3,598,064, E. H. Stempel, SHELVING; **3,765,634,** same, JOINER SUPPORT, **filed** Dec. 3, 1975, D.C., S.D. Fla. (Fort Lauderdale), Doc. FL–75–562–C–CA, *Closet Maid Corporation* v. *James Amos, Maguerite Amos and Larry Stone.*

3,632,138, W. P. Whitley, Jr., IMMERSIBLE BOAT TRAILER WITH BOAT CRADLING AND LATCHING MEANS, **filed** Feb. 14, 1975, D.C., M.D. Fla. (Tampa), Doc. 75–122–C T.H., *Southeastern Fabricators, Inc. et al.* v. *Edward G. Boettcher et al.* Defendants permanently enjoined from infringement upon said patent or from use of said trade name, Nov. 28, 1975.

3,659,284, W. T. Rusch, TELEVISION GAMING APPARATUS; **3,659,285,** Baer, Rusch and Harrison, TELEVISION GAMING APPARATUS AND METHOD, **filed** Nov. 18, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c3933, *Atari, Inc.* v. *The Magnavox Company et al.*

3,659,285. (See 3,659,284.)

3,682,689, Dueltgen and Queener, PROCESS OF SIMULTANEOUSLY CLEANING AND COATING A PHOTOCONDUCTIVE SURFACE WITH A FLUORINATED HYDROCARBON POLYMER, **filed** Nov. 14, 1975, D.C. Colo. (Denver), Doc. 75–1229, *International Business Machines Corp.* v. *Xerox Corporation.*

3,765,634. (See 3,598,064.)

3,771,430, R. W. Lane, LOUVER ASSEMBLY, **filed** Dec. 4, 1975, D.C. Minn. (Minneapolis), Doc. 4–75–C 620, *The Airolite Company* v. *Industrial Louvers, Inc.*

3,842,683. (See 3,218,588.)

3,853,168, W. A. Wrono, ROLL-UP SHADE CONSTRUCTION AND METHOD OF ERECTING SAME, **filed** Mar. 4, 1975, D.C., S.D. Fla. (Fort Lauderdale), Doc. 75–98–C–PF, *Wrono Enterprise Corporation* v. *A.B.C. Foldaway Shutter Corp. et al.* Settlement and consent to entry of final decree, patent is valid and owned by plaintiff. Defendants agree to discontinue from use of any roll-up slatted shade assembly, except as licensed, May 29, 1975. **Same, filed** June 5, 1975, D.C., S.D. Fla. (Fort Lauderdale), Doc. 75–243–C–WM, *Wrono Enterprise Corporation* v. *Sandor-Tapco, Inc.* Judgment, defendant is in default for failure to file an answer. Defendant and their representatives are permanently enjoined from performing any act of infringement, Nov. 26, 1975.

3,896,288, M. J. Tulkoff, METHOD OF HEAT-SHRINK WRAPPING GOODS, **filed** Aug. 4, 1975, D.C., E.D. Mo. (St. Louis), Doc. 75–683C(4), *Black Body Corporation* v. *Shrink-O-Matic, Inc. and Martin J. Fulkoff.* **Same, filed** Sept. 15, 1975, U.S. Court of Claims, District of Columbia, Doc. 335–75, *Shrink-O-Matic, Inc. and Martin J. Tulkhoff* v. *The United States.*

3,898,643, A. B. Ettlinger, ELECTRONIC DISPLAY LIGHTING SYSTEM, **filed** Nov. 26, 1975, D.C., S.D.N.Y., Doc. 75–C–5971 LWP, *Skirpan Lighting Control Corporation* v. *Electronics Diversified, Inc.*

3,901,999, Landis and Williams, LIFT SWING FURNACE, **filed** Nov. 19, 1975, D.C., E.D. Pa. (Philadelphia), Doc. 75–3354, *Inductotherm Corporation* v. *Pillar Corporation.*

Second Trial Voluntary Protest Program

A Second Trial Voluntary Protest Program will be conducted during the coming months. It will be increased in scale and somewhat modified in procedure from the first such program. Announcement of and description of the rules for the first program appeared in 923 O.G. 2 on June 4, 1974.

As before, the objective is to gain experience in carrying out such a program and to determine the extent of interest by the public in participating and in supplying pertinent references. To the extent there is participation, the program should be beneficial by bringing new art to the attention of the Office, preventing inadvertent issuance of invalid patents, and increasing confidence in the strength of those patents which survive the protest proceedings.

The first Trial Voluntary Protest Program showed a considerable interest by applicants and the public in taking part in protest proceedings. A summary of the results will be published soon in this Gazette. The second Trial Voluntary Protest Program is designed to gain additional information as to public participation and also to follow more closely the procedures which would be required in a continuing, permanent protest program.

Applications Involved

In the second Trial Voluntary Protest Program, a Request to Participate and Waiver of Confidentiality form (PTOL–224 Temp.) will be sent to each applicant to whom a Notice of Allowance is mailed during a selected three week period, probably in October, 1975. The total number of requests mailed will be about 4,500. Applications for plant patents will be excluded from the program. The reason for this exclusion is the high cost of printing colored drawings and the relatively limited prior art available. No other applications will be excluded from the trial program, regardless of subject matter, type of application or earlier proceedings.

Waiver of Confidentiality

Two copies of the form letter requesting voluntary waiver of confidentiality (form PTOL–224 Temp.) will be mailed in the same envelope along with the Notice of Allowance. An additional copy of the form letter will be made of record in each application at the time of mailing. The applicant will have three months from the notice of allowance date in which to either (1) elect to participate in the Trial Voluntary Protest Program by filing a signed waiver of confidentiality, or (2) elect not to participate in the program by paying the issue fee. If he does neither, the application will become abandoned, as provided in 37 C.F.R. 1.316. The waiver of confidentiality is a part of form PTOL–224 Temp. This procedure will avoid any increase in pendency time for those applications in which an election is made not to participate in the program. An early filing of a waiver of confidentiality by the applicant will result in early publication of the application.

Publication

If the applicant decides not to participate in the protest program and payment of the issue fee is timely made, the patent will issue routinely without delay.

If the applicant elects to participate in the protest program and a signed waiver of confidentiality is filed in the Office within 3 months of the notice of allowance date, the Notice of Allowance will be vacated. In such a case the issue fee should not be filed, as it will not be accepted and applied if filed with a signed waiver of confidentiality. An additional Notice of Allowance will be issued after the protest proceedings have been completed if only allowable claims remain in the application.

After a signed waiver has been filed, the application will be printed in the form of a patent and be available for sale as in the first Trial Voluntary Protest Program. At least one claim and a drawing figure, if any, will be printed in the OFFICIAL GAZETTE. These published applications will appear in about 6 to 9 issues of the OFFICIAL GAZETTE early in 1976. Advance notice will be given in the OFFICIAL GAZETTE of the dates on which applications will be published under this program.

Inspection of Files

The Patent and Trademark Office files of the published applications will be available for inspection by the public for a period of three months after publication. The application files will be retained in a single location in the Patent Issue Division during the protest period. This single location will be staffed with personnel to process papers directed to these files, supervise inspection of the files by the public, provide copies of file contents when ordered, and perform other related duties. A coin operated copying machine will also be available at this location.

Filing of Protests

Protests relating to the patentability of any published application must be filed in writing in the Patent and Trademark Office no later than three months after publication of the application. No extension of the three month protest period will be granted. Each protest must be filed in duplicate (one copy will be forwarded to the applicant and the other copy will be placed in the application file) and must indicate the grounds for protesting the allowance of any claim contained in the published application. If the protest involves prior art not of record in the application, two copies of the alleged prior art, together with an explanation of the relevance of such prior art to the allowed claims, should be included. The protester may also comment on the prior art record in the application and the manner in which it was applied.

In those applications where prima facie evidence of prior public use or sale the claimed invention is presented in accordance with 37 C.F.R. 1.292, public use proceedings will give the protester an opportunity to present evidence.

Should claims be copied from a published application for interference purposes, the applicant copying claims must also file a notice of such copying in the file of the published application to avoid the possibility of inadvertent issuance of the published application as a patent before conclusion of any interference proceedings.

For easy identification, all protests should be headed, "Protest Under Trial Voluntary Protest Program" and be addressed to:

Commissioner of Patents and Trademarks
Box TVPP
Washington, D.C. 20231

The protester should fully identify himself and include his mailing address so that communications may be addressed to him. In view of administrative problems encountered in the first Trial Voluntary Protest Program in protecting the confidentiality of the identity of protesters, no attempt will be made by the Office to maintain the confidentiality of any protester under the new program.

If no protests are received during the protest period, the application file will be rerouted for the mailing of a new Notice of Allowance. The file will not be returned to the examining group except for consideration of matters which normally require return of an allowed file.

If one or more protests are filed in an application, the application file and the protest(s) will be returned to the examining group for consideration.

Consideration of Protest

The examining group will acknowledge receipt of all protests. The authority for deciding whether or not the evidence submitted constitutes a prima facie showing of unpatentability of any allowed claim will reside with the Group Director. If the Group Director decides that no such showing has been made, the application will be forwarded to the Patent Issue Division for mailing of a new Notice of Allowance. Protesters will be notified in such cases that prosecution has not been reopened, and the applicant will be sent a duplicate copy of all protests. The decision of the Group Director will be final and will not be subject to petition by a protester.

If the Group Director decides that the submitted evidence constitutes a prima facie showing of unpatentability of any allowed claim, prosecution of the application will be reopened. The decision to reopen prosecution will be communicated to the applicant by means of an Office action, signed by a primary examiner, rejecting any claim considered unpatentable. The duplicate copy of each protest will be mailed to the applicant with the Office action. Protesters who submitted evidence on which the rejection is based will be identified in the Office action and will also receive copies of this and subsequent Office actions. Other protesters will be notified that prosecution has been reopened, but based on evidence and for reasons other than those submitted by them and that, consequently, no further correspondence will be directed to them. The applicant will normally be given a three month shortened statutory period to respond to the Office action.

Response by the Applicant to Subsequent Office Actions

During this period, the applicant may present amended or new claims which will be subject to further consideration by the primary examiner. In order to allow protesters who submitted evidence on which a rejection in the Office action

is based to participate in later prosecution and to comment upon further proceedings, applicant will be required to serve by mail upon each protester identified in the Office action, a copy of any response filed, including any appeal brief. Indication of such service will be a required component of a complete response. Applicant need only reply to the rejections and objections made in the Office action. There need be no specific response to any other points raised by the protesters.

Comment on Applicant's Response by the Protester

Each protester served will be allowed one month, running from the date applicant's response or brief is received in the Patent and Trademark Office, to file comments relating thereto. All communications from protesters must be in writing. Examiner interviews with the protesters will not be permitted. No extensions of the one month period will be granted.

Any appeal by the applicant to the Board of Appeals in a protested application will be made special and will be taken up out of order.

Conclusion of Prosecution

If, after further prosecution, the application is found to be allowable, all protesters still participating at that time will be notified and the application will be forwarded to the Patent Issue Division for mailing of a new Notice of Allowance. A decision of the primary examiner to allow an application will not be subject to petition or appeal by any protester.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Sept. 16, 1975.

[938 O.G. 945]

PATENT NOTICES

Certificates of Correction for the Week of Mar. 9, 1976

Re. 28,485	3,894,267	3,912,802	3,919,384
D. 233,264	3,894,355	3,912,873	3,919,460
D. 234,659	3,895,070	3,912,929	3,919,474
3,560,277	3,895,640	3,913,212	3,919,773
3,653,065	3,896,180	3,913,290	3,920,070
3,668,255	3,896,639	3,913,450	3,920,134
3,700,722	3,898,071	3,913,893	3,920,764
3,707,666	3,899,028	3,913,983	3,920,767
3,721,797	3,899,374	3,914,072	3,920,847
3,732,765	3,899,734	3,914,354	3,920,956
3,753,710	3,901,443	3,914,369	3,921,150
3,767,778	3,902,436	3,914,374	3,921,607
3,775,978	3,902,526	3,914,654	3,922,066
3,788,281	3,902,689	3,915,072	3,922,249
3,803,180	3,903,648	3,915,175	3,923,029
3,813,380	3,904,358	3,915,183	3,923,310
3,817,262	3,904,514	3,915,195	3,923,398
3,817,915	3,904,593	3,915,332	3,923,649
3,818,168	3,904,728	3,915,356	3,923,694
3,818,407	3,905,791	3,915,454	3,923,949
3,830,816	3,905,933	3,915,769	3,924,186
3,832,318	3,906,281	3,915,887	3,924,559
3,835,576	3,906,984	3,915,901	3,924,721
3,838,380	3,907,086	3,915,926	3,925,091
3,840,125	3,907,536	3,916,025	3,925,170
3,845,144	3,907,688	3,916,500	3,925,206
3,849,370	3,907,883	3,916,583	3,925,566
3,852,986	3,908,111	3,916,833	3,925,700
3,854,467	3,908,115	3,916,892	3,925,713
3,854,894	3,908,337	3,916,905	3,925,895
3,857,760	3,908,374	3,917,056	3,925,907
3,865,836	3,908,502	3,917,148	3,926,021
3,867,374	3,908,651	3,917,470	3,926,049
3,868,350	3,908,723	3,917,620	3,926,061
3,869,171	3,908,924	3,917,777	3,926,205
3,872,359	3,909,079	3,917,868	3,926,342
3,874,318	3,910,145	3,917,998	3,926,552
3,877,759	3,910,194	3,918,036	3,926,724
3,878,852	3,910,770	3,918,139	3,926,754
3,880,391	3,910,860	3,918,279	3,926,802
3,880,558	3,911,246	3,918,319	3,926,928
3,881,119	3,911,537	3,918,373	3,927,174
3,883,362	3,911,667	3,918,576	3,927,363
3,883,537	3,912,286	3,918,974	3,927,723
3,884,262	3,912,385	3,919,168	3,927,724
3,885,036	3,912,633	3,919,211	3,927,792
3,891,880	3,912,675	3,919,233	3,927,909
3,894,138	3,912,724	3,919,312	

Dedications

3,018,895.—*Ludwig Schmiedel*, Wunstorf-Hannover, Germany. DEVICE FOR FLOATING UP AND WASHING OUT OF GROUND PRODUCTS OR MATERIALS. Patent dated Jan. 30, 1962. Dedication filed June 25, 1975, by the assignee, *Starcosa GmbH*.

Hereby dedicates to the Public the remaining term of said patent.

3,040,893.—*Ludwig Schmiedel*, Wunstorf-Hannover, Germany. SCREENING OF THIN STARCH PASTE. Patent dated June 26, 1962. Dedication filed June 25, 1975, by the assignee, *Starcosa GmbH*.

Hereby dedicates the remaining term of said patent to the Public.

3,060,610.—*Johann Martin Stangl*, Stockton, N.J. DECORATED CERAMIC WARE. Patent dated Oct. 30, 1962. Dedication filed Oct. 20, 1975, by the inventor.

Hereby dedicates to the Public the remaining term of said patent.

3,148,510.—*Ross J. Sullivan*, Centralia, Mo. METHOD OF INSTALLING EARTH ANCHORS. Patent dated Sept. 15, 1964. Dedication filed Oct. 30, 1975, by the assignee, *A. B. Chance Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

Disclaimers

3,699,873.—*Albert H. Irvin*, Richmond, Ind. AIR FLOW CONTROL APPARATUS. Patent dated Oct. 24, 1972. Disclaimer filed Jan. 13, 1976, by the assignee, *Philco-Ford Corporation*.

Hereby enters this disclaimer to claim 1 of said patent.

3,811,727.—*Harvey R. Rumpel*, West Allis, Wis. SEAT BELT ANCHOR MECHANISM FOR ADJUSTABLE SEAT. Patent dated May 21, 1974. Disclaimer filed Aug. 29, 1975, by the assignee, *UOP Inc.*

Hereby enters this disclaimer to claims 1, 2, 3 and 4 of said patent.

3,819,984.—*Kenneth William Hawken*, Newberg, Oreg. SIDE-BY-SIDE DUAL GUN CRT HAVING HORIZONTAL DEFLECTOR PLATES PROVIDED WITH SIDE SHIELDS FOR CORRECTION OF GEOMETRIC DISTORTION. Patent dated June 25, 1974. Disclaimer filed Nov. 19, 1975, by the assignee, *Tektronix, Inc.*

Hereby enters this disclaimer to all claims of said patent.

3,831,167.—*Stuart Keene Tewksbury*, Middletown, N.J. DIGITAL-TO-ANALOG CONVERSION USING MULTIPLE DECODERS. Patent dated Aug. 20, 1974. Disclaimer filed Jan. 2, 1976, by the assignee, *Bell Telephone Laboratories, Incorporated*.

Hereby enters this disclaimer to claims 1 through 4 and 6 through 12 of said patent.

3,833,926.—*Robert P. Hall*, Auburn, Calif. MAGNETIC DISC RECORDER AND CASSETTE WITH COMPLIANT RECORDING DISC HAVING FLEXIBLE SUPPORT MEANS. Patent dated Sept. 3, 1974. Disclaimer filed Dec. 5, 1975, by the assignee, *Arvin Industries, Inc.*

Hereby enters this disclaimer to claims 8 and 10 of said patent.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF FEBRUARY 14, 1976

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	3-19-75
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Sterolds; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-3-75
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	1-13-75
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	3-5-75
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-16-75
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	1-10-75
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	3-17-75
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-1-75
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	8-15-75
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	5-1-75
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	9-30-74
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	3-17-75
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	6-3-75
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-2-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	3-28-75
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	7-21-75

Expiration of patents: The patents within the range of numbers indicated below expire during March 1976, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,875,445 to 2,880,418 inclusive
Plant Patents..... Numbers 1,814 to 1,824 inclusive

PATENT APPLICATIONS

PUBLISHED MARCH 9, 1976
UNDER THE SECOND TRIAL VOLUNTARY PROTEST PROGRAM

NOTE- A copy of the notice setting forth the details of the Second Trial Voluntary Protest Program may be found in the Patent and Trademark Notices section of this issue.

Any protests relating to the patentability of these published applications must be filed in writing before June 9, 1976. These applications are available for inspection in the Allowed Files Branch, Crystal Plaza, Room 2-10C28. All correspondence should be addressed to:

Commissioner of Patents and Trademarks
Box TVPP
Washington, D.C. 20231

Printed copies of the published applications may be purchased from the Patent and Trademark Office at 50 cents each.

An "Index of Applicants and Assignees of Published Applications" and a concordance entitled "Classification of Published Patent Applications" are located in the back of this issue.

GENERAL AND MECHANICAL APPLICATIONS

B 097,259
RIPPER TIP WITH INTER-FITTING SHIN GUARD RETAINING MEANS

Kenneth A. Rhoads, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

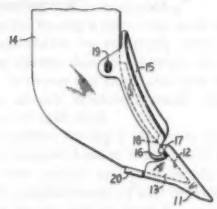
Filed Dec. 11, 1970, Ser. No. 97,259
Int. Cl.[2] A01B *15/02, 23/02*
U.S. Cl. 172—719 **1 Claim**

References Cited
UNITED STATES PATENTS

7,223	1850	Reynolds	172/753
1,937,243	11/1933	Pearch	172/753
2,310,336	2/1943	Zwaska	172/753
3,254,727	6/1966	Helton et al.	172/719
3,536,147	10/1970	Norton	172/719

FOREIGN PATENTS OR APPLICATIONS

246	1882	United Kingdom	172/719
920,825	3/1963	United Kingdom	37/142 R
479,640	12/1951	Canada	172/753



1. An earth ripper apparatus having a replaceable tip, said apparatus comprising:

an elongated shank member having an upper portion, and a lower end portion adapted to extend below the surface of the earth;

said shank having a forwardly directed generally tapered foot portion at said lower end portion;

a removable shoe having a socket which receives said foot portion, and a hook receiving recess formed in the side wall of said shoe an elongated removable wear plate having a lower end including hook means, said plate extending along and carried by the leading edge of said shank and having an upper end terminating above said tapered foot portion of said shank

said hook means engaging said hook receiving recess to retain said shoe on said foot and to retain said lower end of said wear plate in place against the leading edge of said shank at said foot portion; and,

single pin means engaging said wear plate proximate said upper end and said shank above said tapered foot portion to retain said wear plate and said shoe in place in said shank so that said removable shoe is held in place on said shank solely by engagement of said hook means extending from said wear plate into said recess in said removable shoe, and said plate and shoe together secured to said shank solely by said single pin means engaging said shank above said foot portion.

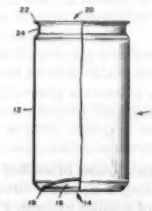
B 223,678
DRAWN AND IRONED STEEL CONTAINER WITH INCLUSIONS AND SPHEROIDAL CARBIDES

Wayne Robert Nixon, Arlington Heights; Edward Willard Hitchler, Elgin, and Edward Frank Kubacki, Arlington Heights, all of Ill., assignors to American Can Company, Greenwich, Conn.

Filed Feb. 4, 1972, Ser. No. 223,678
Int. Cl.[2] B65D *7/42*
U.S. Cl. 220—66 **9 Claims**

References Cited
UNITED STATES PATENTS

1,944,527	1/1934	Pfaendler	220/DIG. 22
2,246,166	6/1941	Dawihl et al.	29/182.7
2,272,277	2/1942	Ramsey et al.	75/123 G
2,943,932	7/1960	White et al.	75/123 AA
3,027,044	3/1962	Winstead	220/72
3,043,461	7/1962	Glassco	220/70
3,045,871	7/1962	Henrickson	220/DIG. 22
3,360,157	12/1967	Bolt et al.	72/349
3,424,576	1/1969	Fogleman et al.	75/123 AA
3,655,366	4/1972	De Paul	75/123 J
3,656,942	4/1972	Kambayashi et al.	75/123 B
3,693,828	9/1972	Kneusel et al.	220/70



1. A thin walled drawn and ironed container body produced from a steel blank having a thickness in the range between 0.01 and 0.013 inches, said container body including integral side and bottom walls, said side wall having a thickness in the range between 0.003 and 0.0045 inches after the drawing and ironing process, said bottom wall having a thickness in the range between 0.01 and 0.013 inches after the drawing and

ironing process, the steel of said blank and said resulting container body having inclusions of 0.0003 inches maximum and spheroidal carbides of 0.0002 inches maximum whereby said side wall is formed without defects therein.

B 311,450

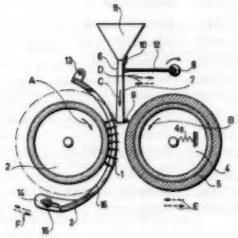
EQUIPMENT FOR THE IMPROVEMENT OF THE EFFICIENCY OF DRYING SHELLED MAIZE

István Slezák, Perkata, Hungary, assignor to Intercooperation Kereskedelemfejlesztesi Rt., Budapest, Hungary

Filed Dec. 4, 1972, Ser. No. 311,450
Claims priority, application Hungary, Dec. 3, 1971, SE 1598
Int. Cl.[2] A23N *1/02*
U.S. Cl. 99—485 3 Claims

References Cited
UNITED STATES PATENTS

525,432	9/1894	Spencer	99/485 X
574,470	1/1897	Averell	83/2
1,174,979	3/1916	Heiderich	193/2 B
1,729,611	10/1929	Forrest	99/485 X
1,735,406	11/1929	Moore	83/2
2,962,230	11/1960	Dilley et al.	241/102 X
3,141,484	7/1964	Lowe et al.	99/485 X
3,196,913	7/1965	Stahmer	83/2
3,468,409	9/1969	Ball	198/165
3,703,917	11/1972	Mundy	83/2
3,760,666	9/1973	Power et al.	99/485 X



1. Equipment for drying grains of shelled maize, comprising a pair of cylinders rotating in opposite directions about parallel axes, a multiplicity of needles extending radially outwardly from the cylindrical surface of one said cylinder toward but spaced from the cylindrical surface of the other said cylinder, the surface of said other cylinder being resilient, a stripping comb for removing grains of maize from said needles, and means for orienting grains of shelled maize so that their flat sides are substantially parallel to said axes and for feeding thus oriented grains of maize between said cylinders, said orienting and feeding means comprising a hopper that feeds to a chute that is closed on all sides, and means for vibrating one wall of said chute to orient said grains, the wall of said chute opposite said vibrating wall being stationary.

B 328,116

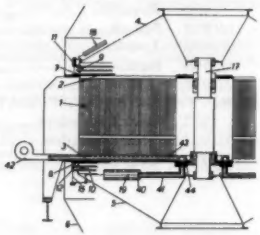
REGENERATIVE AIR PREHEATER WITH AUTOMATICALLY ADJUSTABLE SEALING DEVICE

Ernst Puritz, Dahlbuch, and Erich Kraft, Huettseifen, both of Germany, assignors to Apparatebau Rothemuhle Brandt & Kritzler, Rothemuhle, Germany

Filed Jan. 30, 1973, Ser. No. 328,116
Claims priority, application Germany, Feb. 8, 1972, 2205838
Int. Cl.[2] F28D *17/00*
U.S. Cl. 165—4 12 Claims

References Cited
UNITED STATES PATENTS

2,852,234	9/1958	Mudersbach	165/9
3,246,687	4/1966	Jensen et al.	165/9
3,250,316	5/1966	Nyberg	165/9
3,321,010	5/1967	Brandt et al.	165/4



1. Rotary regenerative air preheater with a cylindrical regenerative mass having a central axis and end faces, sealing elements adjacent, respectively, the end faces of the regenerative mass, the sealing elements being operatively linked to spring loaded pin means adapted for travel in the axial direction of the mass and respective stops defining a limit to the travel of the respective pin means, a temperature responsive device at each end face of the mass, each stop being operatively linked to a respective temperature responsive device through a lever linkage including a crank means, the crank means being borne on a support for pivoting about a pivot axis, the temperature responsive devices being attachable to the crank at any one of a plurality of distances from the pivot axis, and being responsive to alter its length will alteration in temperature to adjust axially the position of said stop, the device at one end of the mass being arranged to cause said stop for the sealing element at the end to move in a given axial direction upon temperature rise and that at the other end of the mass being arranged to cause said stop for the sealing element at the end to move in the same axial direction on temperature rise, both stops being moved in the opposite direction on temperature fall, the directiions bein appropriate to the axial movement of the mass with temperature change

B 391,797

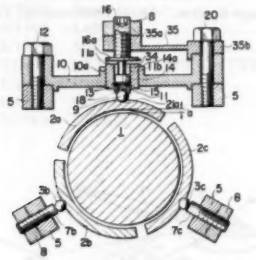
RESILIENTLY MOUNTED GAS BEARING DEVICE

Hiroshi Okano, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Aug. 27, 1973, Ser. No. 391,797
Claims priority, application Japan, Apr. 5, 1973, 48-39198
Int. Cl.² F16C 17/06, 19/04, 23/04, 35/02
U.S. Cl. 308—9 7 Claims

References Cited
UNITED STATES PATENTS

3,063,762	11/1962	Hirtz	308/73
3,202,464	8/1965	Chaboseau et al.	308/73
3,791,703	2/1974	Ifield	308/73
3,804,472	4/1974	Schuller et al.	308/73
3,830,552	8/1974	Schuller et al.	308/121



1. In a dynamic pressure gas bearing assembly for rotatably supporting a shaft having a plurality of bearing pads for supporting the shaft about the circumference thereof by means of a fluid layer between the shaft and the bearing pads during rotation of the shaft, the improvement comprising:

means for mounting one of said bearing pads and allowing movement of the pad toward and away from said shaft, said mounting means comprising:

resilient means having a relatively small spring constant and being deformable by relatively slow movement of said mounting means due to relatively slow buildup of fluid pressure between the shaft and said one bearing pad in order to absorb relatively small vibration or thermal expansion of said shaft,

a resilient member having a relatively large spring constant fixed to a support base in mechanical series relation with said resilient means and deformable by relatively high amplitude displacement of said mounting means in order to absorb shocks due to large forces on said shaft, and

vibration attenuating means for preventing movement of said one bearing pad away from the shaft in response to rapid increase in fluid pressure between the pad and the shaft that is substantially faster than the relatively slow increase in pressure due to relatively high frequency displacements of the shaft.

B 395,554

ROTARY SCREEN REGISTRATION SYSTEM

Peter Zimmer, Untere Sparchen 54, A 6330 Kufstein, Austria

Filed Sept. 10, 1973, Ser. No. 395,554
Claims priority, application Austria, Sept. 8, 1972, 7763/72
Int. Cl.² B41F 15/10, 5/16
U.S. Cl. 101—115 9 Claims

References Cited
UNITED STATES PATENTS

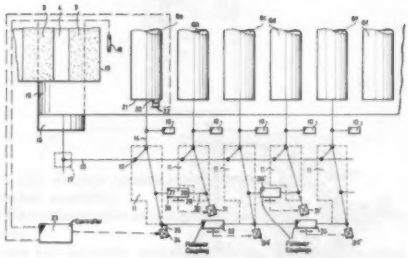
2,928,340	3/1960	Stein et al.	101/116 X
3,152,542	10/1964	Chambon	101/181
3,694,634	9/1972	Horst et al.	101/181
3,774,533	11/1973	Ichinose	101/119
3,834,307	9/1974	Zimmer	101/115

1. In a machine for printing a recurrent pattern on consecutive sections of predetermined length of a textile web, comprising a plurality of parallel printing units with rotary screens overlying the path of the web, common drive means for rotating said screens, transport means for advancing said web at a speed corresponding to the peripheral velocity of said screens, individual lifting means for raising each screen above said path during an inoperative period of the respective units in a predetermined sequence depending upon the advance of said web, and control means in each of said units for angularly adjusting the respective screen in its raised position to correlate its rotary position with the position of an oncoming web section to be imprinted, the combination thereof with:

first sensing means upstream of said units for detecting the movement of a leading edge of said oncoming web section past a predetermined location;

second sensing means at a fixed reference point adjacent the first of said units, as seen in the direction of web movement, for detecting the movement of a mark rotating with the screen of said first unit, indicating the start of a printing pattern on the screen thereof, past said reference point;

a generator of command signals, common to all said units, responsive to noncoincidence of output signals from said first and second sensing means; and



transmission means operatively connecting said generator to said units for sequentially delivering said command signals to said control means of said units for angularly adjusting the screens thereof at times when said screens are in their raised position.

9. In a machine for printing a recurrent pattern on consecutive pile sections of predetermined length carried on a web of textile fabric, comprising a plurality of parallel printing units with rotary screens overlying the path of the web, drive means for rotating said screens, transport means for advancing said web at a speed corresponding to the peripheral velocity of said screens, control means for angularly adjusting said screens to correlate their rotary positions with the position of an oncoming tufted section to be imprinted, and sensing means for determining the relative location of a leading edge of said oncoming tufted section and a mark on one of said screens, said control means being responsive to output signals from said sensing means, the improvement wherein said sensing means comprises two juxtaposed feelers normally overlying said path, first biasing means resisting lifting of one of said feelers off said path by an oncoming pile edge, second biasing means weaker than said first biasing means resisting lifting of the other of said feelers off said path by the oncoming pile edge, and contact means controlled by said feelers for closing a signaling circuit in a nonelevated position of said one of said feelers and in a lifted position of said other of said feelers.

B 417,349

GAS GENERATOR

Fred E. Schneiter, North Ogden; Arnold R. Thompson, Brigham City; Leland E. Davis, Brigham City, and George F. Kirchoff, Jr., Brigham City, all of Utah, assignors to Thiokol Corporation, Newtown, Pa.

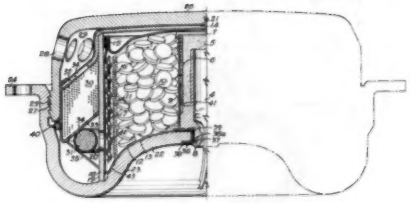
Filed Nov. 19, 1973, Ser. No. 417,349
Int. Cl.[2] F42B 3/04
U.S. Cl. 102—39 4 Claims

References Cited
UNITED STATES PATENTS

2,921,521	1/1960	La Haye et al.	102/39
3,663,035	5/1972	Norton	102/39 X
3,690,695	9/1972	Jones, Sr.	102/39
3,715,131	2/1973	Hurley	280/150 AB
3,723,205	3/1973	Scheffee	149/19
3,733,180	5/1973	Heineck et al.	280/150 AB
3,741,585	6/1973	Hendrickson et al.	280/150 AB
3,771,959	11/1973	Fletcher et al.	23/281 X
3,773,351	11/1973	Catanzarite	102/39
3,827,715	8/1974	Lynch	102/39 X

OTHER PUBLICATIONS

"The Tinsmith's Helper and Pattern Book," Williams copyright 1917, U.P.C. Book Company, pp. 193–198.



1. A gas generator comprising:
ignition means;
gas generant composition annularly surrounding the ignition means in contact therewith;
a rupturable, hermetically sealed container enclosing the ignition means and gas generant;
an inner housing enclosing the container and having peripheral orifices through which the container may be ruptured for expulsion of gases;
an annular filter inside the container, adjacent the orifices of the inner housing;
an outer housing surrounding the inner housing, defining an annular chamber therewith, and having peripheral orifices for expulsion of gases into an inflatable structure; and
cooling means in the annular chamber between the orifices of the inner and outer housings, so that gases produced by the gas generant may pass therethrough.

B 419,173

ESCAPE VEHICLE WITH FLY-AWAY CAPABILITY

George F. Zimmer, Grandad Hills, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Continuation of Ser. No. 138,927, April 30, 1971. This application Nov. 26, 1973, Ser. No. 419,173
Int. Cl.[2] B64D 25/12
U.S. Cl. 244—140 2 Claims

References Cited
UNITED STATES PATENTS

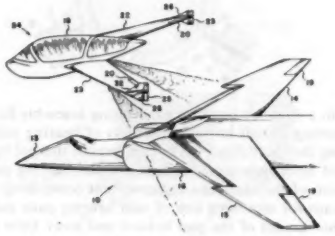
3,006,576	10/1961	Elijah	244/2
3,289,974	12/1966	Cohen et al.	244/2 X
3,298,633	1/1967	Dastoli et al.	244/2

FOREIGN PATENTS OR APPLICATIONS

831,978	4/1960	United Kingdom	244/2

OTHER PUBLICATIONS

"F–111 Escape System," *Flight International*, Oct. 3, 1963, p. 591.



1. In a non-re-entry type vehicle including a fuselage on which a set of wings and an elevator-rudder system are mounted independently of each other, the wings being mounted forwardly of and separately from the vehicle's elevator-rudder system and having a swept-back characteristic, the vehicle having an escape capsule with fly-away capability, an improvement in said escape capsule comprising in combination,
a crew compartment in said capsule and having structural integrity upon its separation from said vehicle and being capable of all flight modes throughout the entire speed range of said vehicle either as part thereof or of the separated capsule,
segments of the wing leading edges of said vehicle being nested in and separable from the balance thereof and being integral with and defining swept-back wings of said capsule upon such separation from said vehicle and providing the flight capability and the stabilization of said capsule necessary for powered and non-powered flight,
an elevon system mounted on each of the capsule wings providing control about both the lateral and longitudinal axes of said capsule,
rudder and vertical stabilizing elements mounted on the tips of the capsule wings for controlling and providing directional control about the vertical axis for said capsule,
rocket means on said capsule for completing its separation from the parent vehicle and for controlling its trajectory and decelerating speed, and
power means to said capsule for effecting flight capability thereof after such separation.

B 425,462
SCALPING APPARATUS FOR A LOW PROFILE TWO-ROLL CRUSHER

Ronald W. Umphrey, and David L. McCain, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

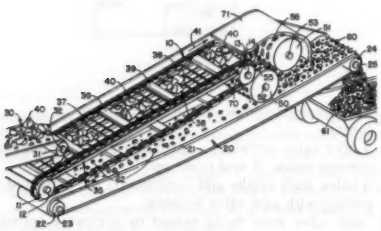
Filed Dec. 17, 1973, Ser. No. 425,462
Int. Cl.² B02C *23/08*
U.S. Cl. 241—81 **5 Claims**

References Cited
UNITED STATES PATENTS

555,533	3/1896	Randolph	209/307
1,715,197	5/1929	Grabill	209/307 X
1,791,365	2/1931	Lieu	209/307
2,292,650	8/1942	Oehler	209/247 X
2,974,797	3/1961	Blackman	209/307
3,016,203	1/1962	Sears	241/24
3,280,977	10/1966	Luken	209/307
3,510,073	6/1967	Mailliard	24/81

FOREIGN PATENTS OR APPLICATIONS

662,777	12/1951	United Kingdom	209/247
845,700	6/1970	Canada	241/69
239,785	7/1969	U.S.S.R.	241/76



1. A low profile apparatus for scalping and crushing products comprising first and second cylindrical roll crushers journaled so that the rotational axes of said first and second cylindrical rolls are parallel and having a first and second radius, respectively; an input conveyor and an output conveyor each having a products side and a return side; means for journaling said first cylindrical roll so that the distance from the axis of said first cylindrical roll to the products side of said output conveyor is slightly greater than the radius of said first cylindrical roll; means for mounting said input conveyor over said first cylindrical roll so that the distance between the axis of said first cylindrical roll and the return side of said input conveyor is slightly greater than the radius of said first cylindrical roll; means for journaling said second cylindrical roll above said first cylindrical roll so that the maximum height of said second cylindrical roll is at least equal to the height of the products side of said input conveyor and less than the maximum height of any products on said products side of said conveyor; means for mounting the input end of said input conveyor in substantially the same plane as said output conveyor; means for mounting said output conveyor under said input conveyor; and scalping means for passing product of a predetermined maximum size or smaller from said input conveyor to said output conveyor said input conveyor conveying product above said predetermined size to said first and second roll crushers wherein it is sized and passed to said output conveyor.

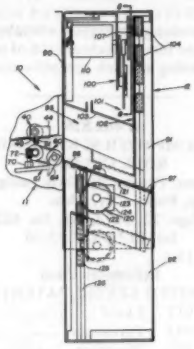
B 435,481
NOTE STORAGE APPARATUS

Frank A. Novak, Seven Hills, and Anthony H. Dolejs, Bedford Heights, both of Ohio, assignors to Ardac, Inc., Willoughby, Ohio

Filed Jan. 22, 1974, Ser. No. 435,481
Int. Cl.² B65H *29/46*
U.S. Cl. 271—180 **25 Claims**

References Cited
UNITED STATES PATENTS

3,655,186	4/1972	Bayha	271/180
3,765,523	10/1973	Nakanishi	209/DIG. 2 X
3,804,266	4/1974	Forthmann	271/180 X



1. A note storage apparatus, comprising:
a stacker assembly,
a collector located in said stacker assembly for receiving the note,
a push bar assembly movably mounted for rolling guided contact in said stacker,
a coffer assembly located in said stacker, and
said push bar assembly selectively contacting the note and transferring it to said coffer assembly.

B 456,153
FILM RECORD CARD

Thomas P. Anderson, 15 Green Bay Road, Hubbard Woods, Ill. 60093

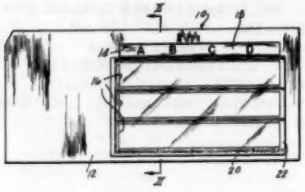
Filed Mar. 29, 1974, Ser. No. 456,153
Int. Cl.² G09F *1/10*
U.S. Cl. 40—159 **2 Claims**

References Cited
UNITED STATES PATENTS

1,376,677	5/1921	Coufal	40/158 R X
3,070,915	1/1963	Walter	40/158 R
3,084,457	4/1963	Schott	35/66
3,089,270	5/1963	Shoemaker	40/158 R
3,238,655	3/1966	Engelstein	40/159
3,339,303	9/1967	Anderson	40/159

1. A microfilm record card comprising:
a card stock having a plurality of apertures formed therein,
a first transparent enveloping member secured to one face of said card stock and underlying all of said apertures,
a translucent semi-opaque ink receptive coating carried directly on at least one portion of said enveloping member and disposed within the area defined by at least one of said apertures to accommodate the reception of inked indicia, and

a second transparent enveloping member overlying all of said apertures but for those exposing said translucent semi-opaque ink receptive coating carried on said first



mentioned enveloping member, whereby said enveloping members define film pockets at each of said apertures but for those exposing said ink receptive coating.

B 462,828

LOW PROFILE SUMP WITH SUBMERGED TRANSVERSE ROLL CRUSHER

Ronald W. Umphrey, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Apr. 22, 1974, Ser. No. 462,828

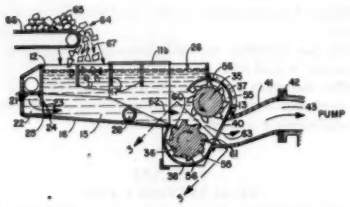
Int. Cl.² B02C *23/36*

U.S. Cl. 241—46.11 **4 Claims**

References Cited

UNITED STATES PATENTS

1,079,301	11/1913	Lloyd	241/236 X
2,280,944	4/1942	Foresman	241/46 R X
2,781,915	2/1957	Wormser	241/222 X
3,240,436	3/1966	Mylting	241/236 X



1. In combination with a hopper assembly for forming a slurry of a granular solid product in water in restricted spaces for transportation by a slurry pump having an open-top tank with horizontal dimensions greater than vertical dimensions and having interconnected end walls and side walls and a bottom tapered downwardly toward one end wall; means for feeding water into the tank adjacent the higher end of the bottom; means for feeding the granular solid into the tank adjacent the higher end of the bottom; means adjacent the lower end of the tank bottom forming an outlet for the slurry to the pump; means in the tank limiting the flow of water through the upper portion of the tank to minimize wave action; and means for maintaining the water at a predetermined level in the tank; a crushing apparatus comprising

a. first and second cylindrical rolls each having a plurality of spaced peripheral teeth;

b. means for axially journaling said first and second cylindrical rolls in said outlet for the slurry pump; and

c. means for axially rotating said rolls to move substantially all of said product and water between said rolls and from said tank to said pump.

B 473,813

GAS LIGHTER

Adolf Schroder, Kelkheim, and Hans Dieter Klauer, Wehrheim, both of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Am Schanzenfeld, Germany

Filed May 28, 1974, Ser. No. 473,813

Claims priority, application Germany, June 18, 1973, 2330960

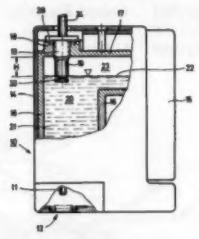
Int. Cl.² B65B *1/04*

U.S. Cl. 141—294 **5 Claims**

References Cited

UNITED STATES PATENTS

3,044,505	7/1962	Iketani	141/294
3,159,991	12/1964	Maltner et al.	431/344
3,217,762	11/1965	Burchett	141/293
3,341,082	9/1967	Meshberg	251/64
3,391,716	7/1968	Projahn	141/295
3,746,301	7/1973	Budzich et al.	251/64



1. A gas lighter comprising in combination:

a. a tank;

b. a filler valve including a valve housing extending into the interior space of said tank; and

c. a valve stem axially and rectilinearly movable and cooperating with said valve housing;

d. said valve stem being biased by a closure spring, said valve stem having a seal surface, the length of said valve housing being so selected that it extends by a dimension H into the interior space of said tank so that when said lighter is in the filling position there exists a volume in said tank above a plane passing through the lower edge of said valve housing, said tank volume being capable of containing a gas which will accommodate the increase of volume of a liquid gas in said tank due to an increase of temperature within the usual ambient temperature ranges;

e. said valve stem including a delay device for delaying the closure motion thereof.

B 493,981

MECHANIC DIGITAL DISPLAY DEVICE

Paul Vogt, Les Hauts Geneveys, Switzerland, assignor to Ebauches S.A., Neuchatel, Switzerland

Filed Aug. 1, 1974, Ser. No. 493,981

Int. Cl.² G09F *9/30*

U.S. Cl. 40—28 C **4 Claims**

References Cited

UNITED STATES PATENTS

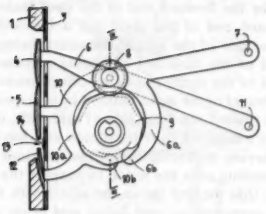
1,091,335	3/1914	Herrmann	40/28 C
1,200,437	10/1916	Harris	40/28 C UX
1,737,573	12/1929	De Mole	40/52 R
3,537,197	11/1970	Smith	40/28 C

FOREIGN PATENTS OR APPLICATIONS

13,031	1906	United Kingdom	40/130 E

1. A mechanical digital display device comprising, a front plate and a rear plate disposed behind the front plate, the front plate having an opening therein forming a rectangular display

zone, a pair of colored rectangular display screens arranged one beneath the other within the zone in front of the rear plate and movable towards and away from each other, the total surface area of the screens being less than the area defined within the zone, each screen being rigidly secured to a respective pivot lever passing through passageways in the rear plate, each lever carrying a cam-operated cam disc for controlling



the movement of the screens, one of said screens being divided into two portions rigidly connected with each other and arranged with a space therebetween, said space defined by said one screen being of rectangular configuration with the long dimension thereof disposed parallel to a short edge of the zone, and a covering strip disposed on the rear plate, the strip having the same color as the screens.

B 495,124

POLYESTER FIBERS HAVING WOOL-LIKE HAND AND PROCESS FOR PRODUCING SAME

Gerard Barbe, Craponne, and Andre Deyres, Venissieux, both of France, assignors to Rhone-Poulenc Textiles, Paris, France

Filed Aug. 5, 1974, Ser. No. 495,124

Claims priority, application France, Aug. 3, 1973, 73.28756; June 10, 1974, 74.20255

Int. Cl.[2] D02G *3/00, 3/02*

U.S. Cl. 57—140 BY **10 Claims**

References Cited

UNITED STATES PATENTS

2,895,946	7/1959	Huffman	260/75 R
3,520,770	7/1970	Shima et al.	161/173
3,671,379	6/1972	Evans et al.	161/173

1. Crimped bicomponent polyester staple fibers having a hand similar to wool, good processability as staple fibers, a crimp contraction less than 60%, and at least 7 crimp half waves/cm, said fibers of 50 to 80% by weight of one component which comprises crosslinked polyethylene terephthalate having about 0.20 to 0.70 mole percent of crosslinking agent, based on the moles of terephthalate units, and having an intrinsic viscosity of about 0.45 to 0.60, and 50 to 20% by weight of the second component which comprises a sparingly crosslinked polybutylene terephthalate having about 0.20 to about 0.60 mole percent of cross-linking agent and having a viscosity in the molten state at 260°C. less than 4,000 poises.

B 498,820

PROTRACTOR WITH DIGITAL READOUT

George J. Joyal, Chicopee, Mass., and George H. Gakeler, Vernon, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 19, 1974, Ser. No. 498,820

Int. Cl.[2] G01B *3/30, 5/24*

U.S. Cl. 33—174 S **5 Claims**

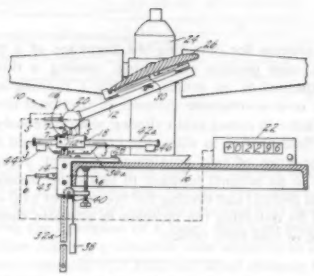
References Cited

UNITED STATES PATENTS

2,000,926	5/1935	Cox	33/75 R
2,359,018	9/1944	Balk	33/174 S
2,369,425	2/1945	Becker	33/174 TC
2,397,300	3/1946	Tilton	33/174 S
2,481,062	9/1949	Anderson	33/75 R
3,195,410	7/1965	Colten et al.	33/174 P X
3,816,930	6/1974	Edenholm	33/174 TA

FOREIGN PATENTS OR APPLICATIONS

915,226	1/1963	United Kingdom	33/174 P



1. A propeller protractor for measuring the blade angle of the blades thereof including a clamp removably fixed to a table supporting the propeller whose blades are intended to be measured and located at a fixed relationship to the station of that blade, a first pair of spaced rod like elements extending vertically relative to the top surface of said table slidably supported in said clamp, a second pair of spaced rod-like elements extending horizontally relative to said top surface attached to said first pair of spaced rod like elements, and movable vertically but remaining in a predetermined parallel relationship to said top surface, a carriage slidably mounted on said second pair of spaced rod like elements, a sine bar pivotally connected at one end to said carriage adapted to be angularly moved to abut against a surface of the blade to be measured, a shaft angle encoder secured to said carriage and connected to the pivoted end of said sine bar to be rotated thereby, a digital readout electrically connected to said shaft angle encoder being programmed to give a digital representation of the angle relationship of said sine bar and a viewer on said readout recording said readout value.

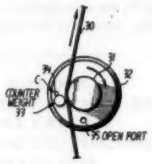
B 506,624
FILAMENT BREAKAGE DETECTION AND CORRECTION

Walter Eugene Bradley, Fort Mill, S.C.; Raeford Warren Clontz, Charlotte, N.C.; Terry Stephen Floyd, Matthews, N.C., and James Reed Honeycutt, Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 413,109, Nov. 5, 1973, Pat. No. 3,857,309.
This application Sept. 16, 1974, Ser. No. 506,624
Int. Cl.² B65H *25/04*
U.S. Cl. 226—1 **9 Claims**

References Cited
UNITED STATES PATENTS

2,675,988	4/1954	Fife	226/45 X
3,584,358	6/1971	Harris	28/50
3,665,844	5/1972	Clark	226/11
3,792,821	2/1974	Fallon	226/11 X



6. A process for detecting the breakage of a continuous filament, said process comprising: passing a fluid from a source thereof to an orifice; passing a running continuous filament over a rotatable cylinder in frictional contact with said cylinder to rotate said cylinder; simultaneously unblocking the fluid oriifice to allow the passage of fluid therefrom; upon breakage of said continuous filament, returning said cylinder to its original position to block the passage of fluid from said orifice; and sensing the breakage of said continuous filament by detecting the increase in pressure caused by the blockage of said fluid orifice.

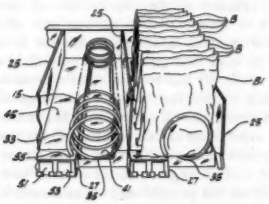
B 510,281
SPIRAL VENDOR

Robert N. Cox, Bridgeton, and Kenneth G. Albers, Florissant, both of Mo., assignors to UMC Industries, Inc., New York, N.Y.

Filed Sept. 30, 1974, Ser. No. 510,281
Int. Cl.² G07F *11/46*
U.S. Cl. 221—75 **10 Claims**

References Cited
UNITED STATES PATENTS

3,335,907	8/1967	Holstein et al.	221/75 X
3,441,174	4/1969	Kenney	221/75
3,469,738	9/1969	Schuller	221/75
3,601,281	8/1971	Schlaf	221/75
3,861,561	1/1975	Wittern et al.	221/75



1. In a vendor comprising a cabinet having a front door, at least one shelf in the cabinet, the forward end of the shelf being spaced rearward from the door to provide a drop space, a helix on the shelf extending in rear-to-front direction with respect to the cabinet and adapted to receive items to be vended between its convolutions, the items being wider than the diameter of the helix, the helix being interiorly unobstructed so that the items may be received between its convolutions extending across the helix from one side thereof to the other, the door having a window for viewing the forwardmost item, means for rotating the helix to advance the items toward the forward end of the shelf and discharge the forwardmost item off the forward end of the shelf to drop down in said drop space, and guides extending in rear-to-front direction on the shelf at opposite sides of the helix defining a path of travel for said items, the improvement comprising the provision of a formation for the forward end of the shelf including a notch at the forward end of the shelf and a forwardly projecting ledge at one side of the notch, the notch being open at the forward end of the shelf and extending rearwardly from the forward end of the shelf, and being offset toward one side of the path of travel of the items defined by said quides, the ledge being offset toward the other side of said path, the helix at its forward end extending over the notch and having an at-rest position wherein its forwardmost convolutions has a lower portion extending over the notch to support the forwardmost item at one side thereof above the notch with the other side of the item supported on said ledge, said lower portion rotating in the direction for withdrawal from under said item when said helix is rotated to discharge said forwardmost item.

B 513,346
CAM-OPERATED PITCH-CHANGE APPARATUS

Philip E. Barnes, West Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 9, 1974, Ser. No. 513,346
Int. Cl.² B64C *11/30*
U.S. Cl. 416—157 B **8 Claims**

References Cited
UNITED STATES PATENTS

2,460,559	2/1949	Wildhaber	416/160
2,479,668	8/1949	Brandon et al.	416/167
2,801,068	7/1957	Deriaz	416/167
3,260,311	7/1966	Kovats	416/157 X
3,331,446	7/1967	Feroy	416/167 X
3,489,338	1/1970	Chilman	416/157
3,801,219	4/1974	Parsons et al.	416/157

FOREIGN PATENTS OR APPLICATIONS

798,405	5/1936	France	416/167
1,012,869	7/1957	Germany	416/167
568,533	4/1945	United Kingdom	416/167
529,023	6/1955	Italy	416/167

1. A pitch-change apparatus for a ducted thrust fan having a plurality of variable pitch blades mounted on a fan hub for pivoting movement about the respective blade axes extending radially from the hub axis, comprising:

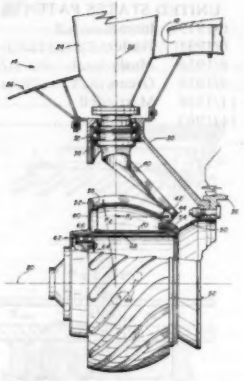
a plurality of pitch-change horns connected respectively to the plurality of variable pitch blades, each horn being connected with one blade for pivoting movement with the blade about the blade axis and projecting outwardly from the blade axis;

a camming ring mounted coaxially of the hub axis at an axially fixed station along the hub axis intercepted by the blade axes for rotation about the hub axis with the blades and relative to the blades, the ring defining on its periphery a plurality of helical camming grooves lying in a surface of revolution whose geometric center is located at the intersection of the blade axes and the hub axis;

a plurality of cam followers mounted respectively on the plurality of pitch-change horns and engaging respectively the plurality of helical camming grooves on the periphery of the camming ring; and

rotary drive means connected in driving relationship with

the camming ring for causing the ring to be rotated and blade pitch to be changed through the cooperative operation of the camming grooves on the ring and the cam followers on the pitch-change horns.



B 517,504

ILLUMINATION SYSTEM

Tomas Hirschfeld, Framingham, Mass., assignor to Block Engineering, Inc., Cambridge, Mass.

Filed Oct. 24, 1974, Ser. No. 517,504

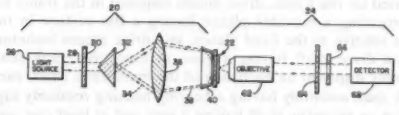
Int. Cl.² G01N *21/26*

U.S. Cl. 356—103 **14 Claims**

References Cited

UNITED STATES PATENTS

3,506,360	4/1970	Albert	250/574
3,700,330	10/1972	Davis	356/102
3,850,525	11/1974	Kaye	356/103



1. In a system having a totally internally reflecting cell and a source of a beam of radiation of at least one selected wavelength, the improvement comprising:

means for directing said radiation along a plurality of paths; and

means for introducing the radiation in at least two of said paths into first and second opposite portions of said cell whereby the level of illumination in said cell is approximately equalized at all points between said opposed portions.

B 527,171

WEFT BAND WITH CARRIER FOR LOOPER LOOMS

Erwin Weidmann, Ruti, Switzerland, assignor to Ruti Machinery Works Ltd., Ruti, Zurich, Switzerland

Filed Nov. 25, 1974, Ser. No. 527,171

Claims priority, application Switzerland, Dec. 4, 1973, 16993/73

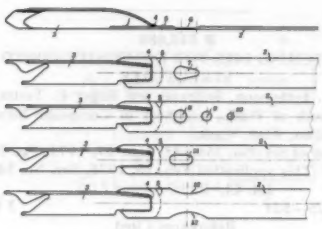
Int. Cl.² D03D *47/18*

U.S. Cl. 139—122 R **7 Claims**

References Cited

UNITED STATES PATENTS

2,151,085	3/1939	Dewas	139/123
2,477,357	7/1949	Whitin	139/123
2,548,663	4/1951	Fletcher et al.	139/123
3,088,497	5/1963	Guindon	139/122 N
3,159,184	12/1964	Brown, Jr. et al.	139/122 R
3,272,237	9/1966	Consoletti	139/122 N
3,517,705	6/1970	McClure, Jr.	139/122 R
3,669,155	6/1972	Dewas	139/123



1. A weft band attached at one end thereof with a yarn carrier having a connecting area therebetween, said weft band and connected yarn carrier used for inserting weft threads into sheds during the operation of a loom, said weft band having a first section defining a vibration zone adjacent to said connecting area separated by a relatively small distance from the rear end of said carrier and a second section bordering on said first section, said weft band having a reduction in material in said first section in relation to said second section to produce a substantial decrease in the stress in said connecting area when said weft band and yarn carrier are in operation.

B 536,511

SPLIT RING BURNER FOR WELD PREHEAT

Robert Allen Epperson, Chattanooga, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 26, 1974, Ser. No. 536,511

Int. Cl.² F23D *19/00*

U.S. Cl. 432—49 **2 Claims**

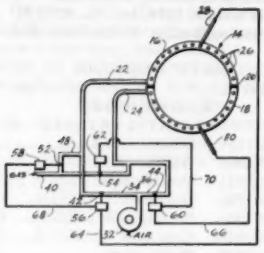
References Cited

UNITED STATES PATENTS

2,296,387	9/1942	Inskeep et al.	266/5 F
3,107,904	10/1963	Dailey	432/49

1. In combination, burner means for maintaining a large, vertically positioned weld in a large metal member at a predetermined temperature for extended periods of time, including first and second burners, the first being positioned below the second, first temperature sensing means positioned adjacent a lower portion of the weld, second temperature sensing means positioned adjacent an upper portion of the weld, first control means for controlling the flow of fuel and air to the first burner, second control means for controlling the flow of fuel and air to the second burner, the first temperature sensing means being connected to the first control means and the second temperature sensing means being connected to the

second control means, such that the temperature of the entire weld remains substantially equal, at the predetermined temperature, in spite of the unbalancing effect of rising heat from the lower burner.



B 548,688

MATCHING DIES FOR COMPOSITE CORED STRUCTURES

William H. Fetherston, Bellevue, and Roger C. Teeter, Redmond, both of Wash., assignors to Composite Structures Corporation, Kent, Wash.

Division of Ser. No. 266,645, June 27, 1972, Pat. No. 3,879,245. This application Feb. 10, 1975, Ser. No. 548,688

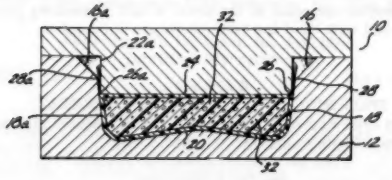
Int. Cl.² B29C *3/00, 17/00*

U.S. Cl. 425—521 **3 Claims**

References Cited

UNITED STATES PATENTS

3,200,465	8/1965	Lassman	425/415
3,244,782	4/1966	Eyberger	425/DIG. 42
3,256,375	6/1966	Bolelli et al.	425/398 X
3,324,511	6/1967	Micai et al.	425/398
3,447,205	6/1969	Dorsey	425/415 X
3,564,602	2/1971	Peck	425/521 X



1. A pair of movable matched metal dies, for one step molding of a structural part having a core and a reinforcing cover, for use in a compression molding press the matched metal dies comprising: a lower die having a recess shaped to define the bottom and sides of a structural part; a cant extending upwardly and outwardly on all sides of the recess; an upper die extending downwardly into the recess of the lower die to contact the canted sides of the recess and to define the upper surface of a structural part, said downwardly extending upper die having sides extending at an angle of between two and ten degrees to the canted sides of the recess; and the lower die having a sharply increased outwardly extending angle to the canted sides of the recess starting on a line at least one quarter inch above the line of contact between the upper and lower dies.

B 548,978

DRIVE MECHANISM FOR A MOVABLE PLATEN

Edwin Bolliger, Chemin Rene' Morax, 1110 Morges, Switzerland

Filed Feb. 11, 1975, Ser. No. 548,978

Claims priority, application Switzerland, Feb. 12, 1974, 2024/74

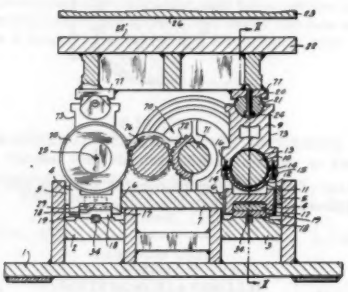
Int. Cl.² B26D *5/14;* **B31B** *1/16*

U.S. Cl. 93—58.3 **10 Claims**

References Cited

UNITED STATES PATENTS

1,142,575	6/1915	Inman	93/58.3 X
1,809,040	6/1931	Husler	83/700 X
2,757,731	8/1956	Musly	83/527
2,833,349	5/1958	Green	83/699 X
2,910,898	11/1959	Martindell	83/527 X
3,111,054	11/1963	Tishkin	83/699 X



1. In a press having a frame, a fixed platen with a flat surface mounted on the frame, drive means disposed in the frame for reciprocating a movable platen having a flat surface in the frame relative to the fixed platen, said drive means including a main drive shaft having a gear, at least one crank shaft assembly disposed on each side of the main drive shaft, each crank shaft assembly having a bearing housing rotatably supporting an eccentric shaft having a gear and at least one connecting rod coupled to the movable platen, the gear of said drive shaft being in driving engagement with the gear of each assembly on one side and driving the gear of each assembly on the opposite side through an intermediate gear, said frame including means for mounting each of the bearings thereon, the improvement comprising each of the means for mounting including means for adjusting the distance of each bearing housing from the fixed platen both independently and simultaneously with the adjusting of the distance of the other bearing housings so that the orientation of the surface of the movable platen can be adjusted relative to the flat surface of the fixed platen and the force of impression of the press can be adjusted.

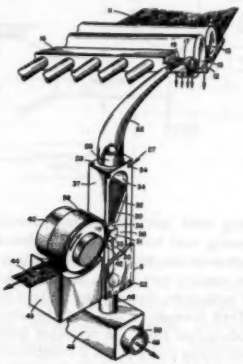
B 569,501
METHOD OF FIBER DISTRIBUTION AND RIBBON FORMING

Roger S. Brown, New Orleans, and James I. Kotter, Metairie, both of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 404,976, Oct. 10, 1973, abandoned. This application Apr. 18, 1975, Ser. No. 569,501
Int. Cl.[2] D01G *15/52*
U.S. Cl. 19—155 1 Claim

References Cited
UNITED STATES PATENTS

3,443,372	5/1969	Eddleston	19/106 X
3,635,006	1/1972	Fehrer	19/150 X



1. A method for producing multiple uniform ribbons of fibers from a single source of fibers and subsequently feeding the strands severally to an associated but remotely located yarn spinning head assembly, said method comprising:

a. removing fibers pneumatically from a fiber opening and cleaning means and simultaneously purging any residual foreign matter from said fibers,

b. Apportioning the removed fibers into a plurality of fiber streams and directing the streams severally to a corresponding plurality of pneumatic conveying tubes,

c. conveying the fibers of each individual conveying tube to an associated fiber condensing means,

d. assembling the fibers within each of said condensing means into a continuous fibrous ribbon, said ribbon adapted for subsequent processing,

e. collecting and recycling any excess fibers from each of said condensing means to the opening and cleaning means.

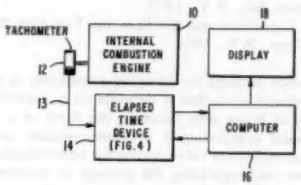
B 569,859
ACCELERATION BURST TEST APPARATUS AND METHOD FOR INTERNAL COMBUSTION ENGINES

Richard Eric Hanson, Winchester, Mass., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 21, 1975, Ser. No. 569,859
Int. Cl.[2] G01M *15/00*
U.S. Cl. 73—116 6 Claims

References Cited
UNITED STATES PATENTS

3,331,200	7/1967	Byron et al.	73/116 UX
3,657,922	4/1972	Sibeud	73/117.3
3,817,092	6/1974	Ludloff	73/133 R



1. Means for measuring the time taken in a full-throttle acceleration burst test of an internal combustion engine in accelerating between a low speed and a higher speed, comprising

tachometer means coupled to said engine to generate one electrical pulse per engine cycle of the engine,

means for measuring the time periods between successive pulses, each time period constituting the reciprocal of the average speed of the engine during the particular engine cycle, and

means for adding a portion of the time period corresponding with a low speed and a portion of the time period corresponding with a high speed to the intermediate time periods.

B 181,208
MEANS FOR DEPOSITING AEROSOL SPRAYS IN BUTTERY FORM

Wolfe Harry Feinstone, and Fred J. Bandelin, both of Memphis, Tenn., assignors to Plough, Inc., Memphis, Tenn.

Continuation-in-part of Ser. No. 817,572, April 18, 1969, abandoned. This application Sept. 16, 1971, Ser. No. 181,208

Int. Cl.[2] **A61K** *7/00, 7/42, 9/12;* **B65D** *83/14*

U.S. Cl. 424—45 **10 Claims**

References Cited

UNITED STATES PATENTS

2,853,423	9/1958	LaVia	424/47
3,079,299	2/1963	Heilig	424/45
3,135,658	6/1964	Hanus et al.	424/45
3,419,658	12/1968	Sanders	424/47 X

FOREIGN PATENTS OR APPLICATIONS

403,790	2/1965	Japan	424/45
383,944	4/1963	Japan	424/47
1,402,092	4/1964	France	424/45
993,702	6/1965	United Kingdom	424/45
933,486	8/1963	United Kingdom	424/47
1,026,831	4/1966	United Kingdom	424/45

OTHER PUBLICATIONS

Sagarin, Cosmetics, Science and Technology, p. 832, Interscience Publishers, Inc., N.Y., 1957.

Wells et al., Cosmetics and the Skin, pp. 519–520, Reinhold Publishing Corp., N.Y., 1964.

1. An aerosol package for spraying a cosmetic or pharmaceutical substance such that it deposits on a desired limited surface area of living skin tissue in the form of a buttery, liquescent solid comprising a pressure-resistant container; actuatable aerosol spray valve means for hermetically sealing said container and regulating the passage of material therethrough such that it leaves the terminal orifice as a finely divided spray, said container housing an anhydrous cosmetically or pharmaceutically acceptable, oleaginous base containing said substance; a wax in an amount of about 5 to 50% by weight of the base, said wax being a paraffin wax having a melting point in the range of 120° to 150°F.; and an effective amount of a propellant miscible with said base.

B 214,925
FIBRIL FORMATION PROCESS

Joseph Calvin Davis, DeSoto; Francis Ross Galiano, Overland Park, and Robert William Hill, Leawood, all of Kans., assignors to Gulf Research & Development Co., Pittsburgh, Pa.

Filed Jan. 3, 1972, Ser. No. 214,925

Int. Cl.[2] **B02C** *18/00*

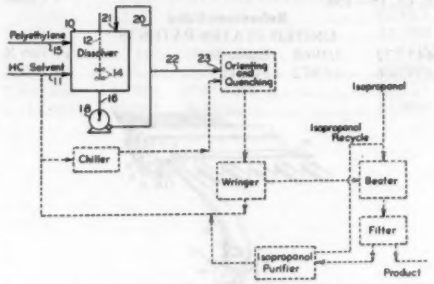
U.S. Cl. 264—140 **2 Claims**

References Cited

UNITED STATES PATENTS

3,058,971	10/1962	Miller et al.	260/94.6 F
3,244,688	4/1966	Goins	260/94.6 F
3,308,211	3/1967	Plastridge	264/9
3,372,154	3/1968	Turner et al.	260/94.9 F
3,432,579	3/1969	Zavasnik	264/5
3,468,986	9/1969	Watanabe	264/9
3,563,885	2/1971	Talbot	210/54
3,655,829	4/1972	Ronzoni et al.	264/171

1. In a process for producing fibrils from a high molecular weight polymer which are readily suitable for incorporation in the paper-making process, including the steps of dissolving at an elevated temperature an olefin polymer having an inherent viscosity of at least 3.5 in a hot hydrocarbon solvent to obtain a hot polyolefin solution, shearing the hot polyolefin solution to thereby orient the polymer molecules therein, passing the sheared solution through a cooling zone maintained at a temperature well below the precipitation temperature of the solution while maintaining the orientation of the polymer molecules within the solution to thereby precipitate by thermal means the polymer solute of the solution in the form of a solvent swollen fibrous strand, separating a substantial portion of the polymer solvent from the fibrous strand, chopping and then beating the chopped fibrous strand in a liquid which is a nonsolvent for the polymer and which is soluble in the polymer solvent for a time sufficient to break down the fibrous strand into a plurality of fibrils, and separating the fibrils from the nonsolvent liquid, the improvement consisting of the step



of homogenizing said hot polyolefin/hydrocarbon solvent solution by passing said hot polyolefin/hydrocarbon solvent solution through a device imposing a high shear on said solution to thereby remove any small, invisible globules of partially dissolved polyolefin that may be present in said solution prior to the fibril formation steps of the process whereby paper sheets fabricated from the resultant fibrils are free of small knots and lumps and possess a completely smooth surface.

B 372,016
PROCESS FOR MAKING A 2'-HALOPENICILLIN

Hiroshi Tanida, Osaka, and Teruji Tsuji, Takatsuki, both of Japan, assignors to Shionogi & Company, Ltd., Japan

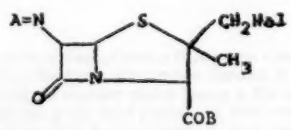
Filed June 21, 1973, Ser. No. 372,016

Claims priority, application Japan, June 29, 1972, 47-65355; Nov. 14, 1972, 47-114105

Int. Cl.[2] **C07D** *499/04*

U.S. Cl. 260—239.1 **7 Claims**

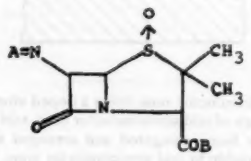
1. A process for the preparation of a 2'-halopenicillin compound of the following formula:



wherein A=N is a substituted amino selected from the group consisting of phenoxyacetamido, phenylacetamido, thienylacetamido, phenylglycylamino, phenylglycylamino substituted by alkanoyl or alkoxycarbonyl having up to 12 carbon atoms on its amino group, 2-ketopinoylamino, norbornanecarbonylamino, benzamido, 3-phenyl-5-methylisoxazole-4-carbonamido, alkoxycarbonamido having up to 12 carbon atoms, haloalkoxycarbonamido having up to 12 carbon atoms, o-nitrophenylsulfenylamino, benzylideneamino, hydroxybenzylideneamino, phthalimido, 2,2-dimethyl-4-phenyl-5-oxoimidazolidin-1-yl, 2,2-dimethyl-3-nitroso-4-phenyl-5-oxoimidazolidin-1-yl, and tritylamino; B is a member selected from the group consisting of alkoxy having 1 to 12 carbon

atoms, haloalkoxy having 1 to 12 carbon atoms, phenacyloxy, halophenacyloxy, methoxymethoxy, alkanoyloxymethoxy having up to 12 carbon atoms, benzyloxy, benzyloxy substituted by nitro, alkoxy having up to 12 carbon atoms or halo, benzhydryloxy, benzalamino-oxy, hydroxy, sodio-oxy, potassio-oxy, trimethylsilyloxy, trimethyltin-oxy, and triethylammonium-oxy; and Hal is fluorine, chlorine, bromine or iodine,

by the reaction of a penicillin-1-oxide compound of the following formula:



wherein A and B are as defined above, with an acid halide selected from the group consisting of alkanoyl halides having 1 to 12 carbon atoms, chloroacetyl chloride, oxalyl halide, crotonyl halide, ethynylacetyl halide, phenylacetyl halide, thiopheneacetyl halide, benzoyl halide, benzoyl halide substituted by nitro, methoxy, alkyl having 1 to 12 carbon atoms or halogen, naphthoyl halide, thienoyl halide, nicotinoyl halide, quinolinecarbonyl halide, alkanesulfonyl halide having up to 12 carbon atoms, benzenesulfonyl halide, benzenesulfonyl halide substituted by alkyl having 1 to 12 carbon atoms, methoxy, nitro or halo, naphthalenesulfonyl halide, quinoline-8-sulfonyl halide, 1,3,4-thiadiazolylsulfonyl halide, alkyl haloformate having up to 12 carbon atoms, and phenyl haloformate,

in the presence of a base selected from the group consisting of dialkylamine or trialkylamine having up to 12 carbon atoms, N-methylpiperidine, N-methylmorpholine, N-ethylpyrrolidine, N,N-dimethylbenzylamine, pyridine, picoline, lutidine, quinoline, isoquinoline, N,N-dimethylaniline, urea, thiourea, guanidine, and N-lower alkylurea having up to 12 carbon atoms,

at a temperature of from 70°C to 130°C.

B 372,722

PRODUCTION OF AMMONIUM DIURANATE

Robert R. Fuller, Columbia, S.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 22, 1973, Ser. No. 372,722
Int. Cl.² C01G *43/00*
U.S. Cl. 423—15 **4 Claims**

References Cited
UNITED STATES PATENTS

2,466,118	4/1949	Miller et al.	423/15
3,000,698	9/1961	Crowe	423/15
3,272,602	9/1966	Suehiro et al.	423/252
3,394,997	7/1968	Hollander	423/15
3,579,311	5/1971	McCoy	423/261
3,726,650	4/1973	Welty	423/15
3,758,664	9/1973	Gerrald	423/15

1. The process of continuously converting uranium hexafluoride (UF_6) to ammonium diuranate (ADU) which is calcinable to good ceramic quality UO_2, comprising the steps of

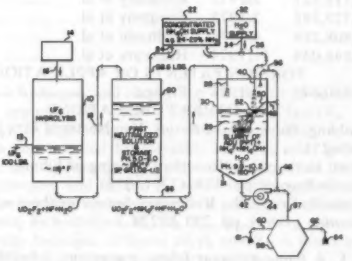
a. dissolving the UF_6 in water to produce an aqueous acidic hydrolysis solution containing UO_2F_2 and HF,

b. partially neutralizing the aqueous hydrolysis solution with concentrated ammonium hydroxide, from about 24 to 29% NH_3, to a pH of from 5.0 to 6.0,

c. conveying the partially neutralized hydrolysis solution to a precipitation vessel where sufficient additional concentrated ammonium hydroxide is added to bring the pH to a value of from 9.8 to 10.2 to cause the UO_2F_2 to form ADU as a precipitate suspended in the aqueous solution with substantially all of the fluoride being converted to NH_4F,

d. withdrawing the precipitate suspension from the lower portion of the precipitation vessel and injecting a stream thereof forcefully under pressure into the suspension liquid, the stream being injected in the vicinity of the liquid surface and at an angle of from about 30° to 60° to the horizontal, the withdrawal and return of the suspension being at a rate of the order of a gallon a minute to effect a complete turnover of the precipitation vessel suspension in a period of the order of a minute, the injected stream causing violent agitation and circulation of the suspension in the precipitation vessel so that ADU precipitate particles of high surface area are produced,

e. a small portion of the suspension in the precipitation vessel being continuously withdrawn and the ADU particles therein are substantially dewatered to provide a sludge comprising at least about 35% ADU by weight.



B 378,760

FLAME RESISTANT CLOTH

James Economy, Eggertsville; Francis J. Frechette, Tonawanda, and Luis C. Wohrer, Lewiston, all of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Continuation of Ser. No. 107,484, Jan. 18, 1971, abandoned, which is a division of Ser. No. 764,935, Oct. 3, 1968, Pat. No. 3,628,995. This application July 12, 1973, Ser. No. 378,760

Int. Cl.[2] D03D *25/00*; D04B *1/16*

U.S. Cl. 428—224 **6 Claims**

References Cited

UNITED STATES PATENTS

1,309,581	7/1919	Matheson	117/136
2,186,917	1/1940	Gaylor	117/136
2,217,049	10/1940	Greenleaf	57/144
2,312,296	2/1943	Hempel	117/138.8
2,378,667	6/1945	Vaala	260/43
2,535,373	12/1950	Shearer	264/126
2,543,101	2/1951	Francis	117/140 A
2,782,174	2/1957	Hetherington et al.	117/136
2,833,681	5/1958	Nelson et al.	117/136
2,939,200	6/1960	Ewing et al.	161/176
3,027,222	3/1962	Wilkinson	161/403
3,090,103	5/1963	Crawley	139/420
3,366,001	1/1968	Meserole	57/144
3,507,608	4/1970	Eirich	161/176
3,540,452	11/1970	Usher et al.	161/176
3,549,474	12/1970	Lonning	161/403
3,628,995	12/1971	Economy et al.	117/138.8 G
3,650,102	3/1972	Economy et al.	161/172
3,651,199	3/1972	Blume	260/57
3,700,544	10/1972	Matsui	161/175
3,716,521	2/1973	Economy et al.	260/59
3,723,588	3/1973	Economy et al.	260/59
3,808,289	4/1974	Okuhashi et al.	260/841
3,848,044	11/1974	Hagiwara et al.	264/176 F

FOREIGN PATENTS OR APPLICATIONS

860,045	1/1941	France	260/59

OTHER PUBLICATIONS

Golding, *Polymers and Resins*, Van Nostrand Co., (1959), pp. 243–251.

Pohl, Herbert A., "Reaction Spinning of Fibers," *Textile Research Journal*, pp. 473–477, (1958).

Kaswell, Ernest R., *Wellington Sears Handbook of Industrial Textiles*, (1963), pp. 233 & 234.

1. A flame resistant fabric comprising infusible fibers of cured resin condensation products of phenols and aldehydes blended with fibers selected from the group consisting of animal fibers, polyamide fibers, polyacrylonitrile fibers, flurocarbon fibers, glass fibers, mineral fibers, cotton fibers, rayon fibers, polyester fibers, polyolefin fibers, polyvinyl fibers, and mixtures thereof.

B 399,632

THERMOELEMENT ON SEMICONDUCTOR BASE

Herbert Weiss, Munich; Otto Maurer, Worth, and Peter Kolbow, Minfeld, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 21, 1973, Ser. No. 399,632

Claims priority, application Germany, Sept. 29, 1972, 2247962

Int. Cl.[2] H01L *35/04*

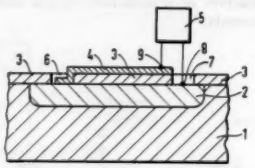
U.S. Cl. 136—205 **12 Claims**

References Cited

UNITED STATES PATENTS

3,280,391	10/1966	Bittmann et al.	357/15
3,460,008	8/1969	Dahlberg	357/87 X
3,504,240	3/1970	Dahlberg	357/87 X
3,706,014	12/1972	Dean	357/15

1. A two-pole thermoelement arrangement consisting essentially of a semiconductor base, a semiconductor zone, an electrically insulating layer, a conductive path and two terminal contacts, said conductive path being elongated and electrically conductively connected at one end thereof to said semiconductor zone with the remainder of said conductive layer being arranged on said electrically insulating layer, said electrically insulating layer being positioned outside such connection between said conductive path and said semiconductor



zone, said semiconductor zone being a doped elongated zone adjacent one face of said semiconductor base, said electrically insulating layer being elongated and arranged in generally adjacent relationship to said semiconductor zone, one of said terminal contacts being on the opposite end of said conductive path, the other of said terminal contacts being on said semiconductor zone in a region thereof generally adjacent said one terminal contact but generally remote from such connection.

B 413,379

α-CHLOROACETANILIDE SELECTIVE HERBICIDES

Henry Bluestone, Beachwood; James A. Scozzie, Willoughby Hills, and Joseph A. Ignatoski, Mentor, all of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 316,408, Dec. 18, 1972, abandoned. This application Nov. 6, 1973, Ser. No. 413,379

Int. Cl.[2] C07C *103/365*

U.S. Cl. 260—562 B **2 Claims**

References Cited

UNITED STATES PATENTS

3,268,584	8/1966	Olin	260/562
3,403,994	10/1968	Olin	260/562
3,442,945	5/1969	Olin	260/562
3,475,156	10/1969	Olin	260/562
3,475,157	10/1969	Olin	260/562
3,535,377	10/1970	Steinbrunn et al.	260/562

OTHER PUBLICATIONS

Chupp et al., J. Org. Chem., Vol. 34, pp. 1192–1197 (1969).

Wolf et al., Liebigs Annelen Der Chemie, Vol. 626, pp. 47–60 (1959).

1. 2-Chloro-2′,6′-diethyl-N-propargylacetanilide.
2. 2-Chloro-2′-methyl-6′-ethyl-N-propargylacetanilide.

B 446,107

α-ALKYL(OR ARYL)THIO-5-HYDROXYTRYPTOPHAN DERIVATIVE AND THE PREPARATION PROCESS THEREOF

Genichi Tsuchihashi, Tama, and Katsuyuki Ogura, Sagamihara, both of Japan, assignors to Sagami Chemical Research Center, Japan

Filed Feb. 26, 1974, Ser. No. 446,107

Claims priority, application Japan, Mar. 1, 1973, 48-23734

Int. Cl.[2] C07D *209/20*

U.S. Cl. 260—326.12 R **2 Claims**

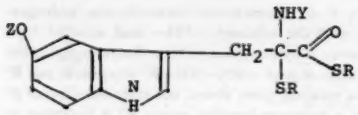
References Cited

OTHER PUBLICATIONS

Sundberg, "The Chem. of Indoles," pp. 234–235, (1970).

Howlihan, "Indoles," part I, pp. 246–248, part II, p. 221, (1972).

1. A thio-5-hydroxytryptophan derivative expressed by the following formula



(I)

wherein R is alkyl having one to three carbon atoms, Y is acetyl, trifluoroacetyl, benzyloxycarbonyl or p-toluenesulfonyl and Z is methyl, benzyl, benzoyl or acetyl.

B 450,693

ALKYNYLATION PROCESS

Gabriel Saucy, Essex Fells, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 57,372, July 22, 1970, Pat. No. 3,816,458, and a continuation-in-part of Ser. No. 813,693, April 4, 1969, abandoned, said Ser. No. 57,372, Continuation-in-part of Ser. No. 679,989, is a continuation-in-part of Ser. No. 633,730, April 26, 1967, abandoned, which is a continuation-in-part of Ser. No. 604,124, Dec. 23, 1966, abandoned, which is a continuation-in-part of Ser. No. 549,816, May 13, 1966. This application Mar. 13, 1974, Ser. No. 450,693

Int. Cl.[2] C07J *1/00, 15/00*

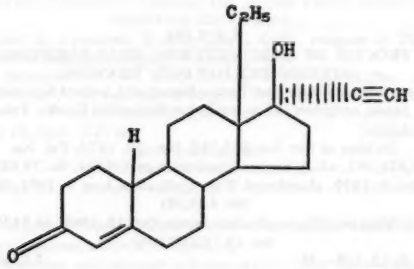
U.S. Cl. 260—397.4 **3 Claims**

References Cited

UNITED STATES PATENTS

3,534,139	10/1970	Barcourt et al.	260/397.4
3,535,349	10/1970	Windholz et al.	260/397.4
3,759,961	9/1973	Wieske et al.	260/397.4
3,875,188	4/1975	Galantay	260/397.4

1. A process for the preparation of a compound of the formula



which comprises treating at a temperature in the range between -60°and −30°presence of liquid ammonia, a 13β-ethyl-gon-4-ene-3,17-dione with an alkynylating agent selected from the group consisting of alkali acetylide and acetylene-magnesium halide.

B 450,708

TETRAHYDROPYRAN-2-OLS

Gabriel Saucy, Essex Fells, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 57,372, July 22, 1970, Pat. No. 3,816,458, which is a continuation-in-part of Ser. No. 679,989, Nov. 2, 1967, Pat. No. 3,544,598, which is a continuation-in-part of Ser. No. 633,730, April 26, 1967, abandoned, which is a continuation-in-part of Ser. No. 604,124, Dec. 23, 1966, abandoned, which is a continuation-in-part of Ser. No. 549,816, May 13, 1966, abandoned, which is a continuation-in-part of Ser. No. 813,693, April 4, 1969, abandoned. This application Mar. 13, 1974, Ser. No. 450,708

Int. Cl.[2] C07D *315/00*

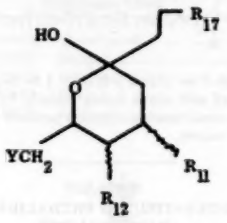
U.S. Cl. 260—345.9 **8 Claims**

References Cited

UNITED STATES PATENTS

3,631,039	12/1971	Andrews et al.	260/584 A X
3,655,695	4/1972	Andrews et al.	260/345.9 X
3,813,417	5/1974	Cohen et al.	260/345.9 X

1. A compound of the formula



wherein Y is hydrogen; and alkyl group of from 1 to 6 carbons or a group of the formula $R_8CH_2C(R_3, R_4)CH(R_{14})CH(R_{15})$—wherein R_3, when taken alone, is hydroxy or a conventional hydrolyzable ether or ester group convertible to a hydroxy group by hydrolysis. R_4, when taken alone is hydrogen, and R_3 and R_4, when taken together, are oxo or a conventional hydrolyzable ketal group convertible to an oxo moiety by hydrolysis; R_8, R_{11}, R_{12}, R_{14} and R_{15} are each independently hydrogen or lower alkyl; and R_{17} is lower hydrocarbylamino or di(lower hydrocarbyl)amino.

B 456,069

TRANSPARENT ABRASION-RESISTANT COATING FOR A STYRENE ACRYLONITRILE COPOLYMER AND METHOD

Roger L. Kaas, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 29, 1974, Ser. No. 456,069

Int. Cl.[2] B32B *9/04;* **B05D** *3/10*

U.S. Cl. 428—447 **5 Claims**

References Cited

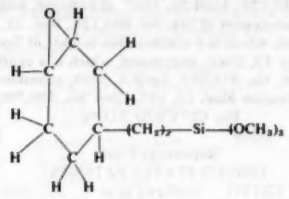
UNITED STATES PATENTS

2,744,878	5/1956	Smith et al.	117/161 ZA
3,616,294	10/1971	Khelghatian	117/47 A
3,619,246	11/1971	Bragok	117/47 A
3,650,814	3/1972	Elder	117/161 ZA
3,650,859	3/1972	D'Ohario	117/47 A
3,713,880	1/1973	Krekeler	117/161 ZA

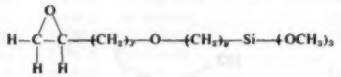
1. A transparent, abrasion-resistant article comprising a styrene-acrylonitrile resin base layer and a coating layer integrally bonded to said base layer consisting essentially of the dried condensation reaction product of, by weight, from

1. 1 to 10 parts of partially hydrolyzed poly(vinyl acetate),

2. 10 to 50 parts of tetraethyl orthosilicate, said silicate being previously equilibrated in the presence of water, and
3. from ½ to 15 parts of a silane compound selected from the group consisting of those compounds described by the general formula:



where x is from 1 to 10 and those indicated by the general formula:



where x is from 1 to 10 and y is from 1 to 10, said trimethoxy functionality of said silane being initially hydrolyzed in said solution, said condensation reaction product being essentially a crosslinked matrix.

B 456,869

3,3-DISUBSTITUTED PHTHALIDES AND NAPHTHALIDES

Eva R. Karger, Arlington, and Paul T. MacGregor, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 202,558, Nov. 26, 1971, Pat. No. 3,816,124. This application Apr. 1, 1974, Ser. No. 456,869

Int. Cl.² C07D *209/18*

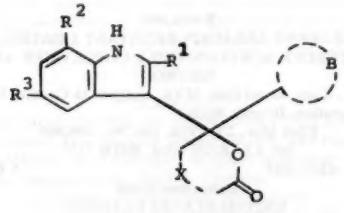
U.S. Cl. 260—326.13 R **13 Claims**

References Cited

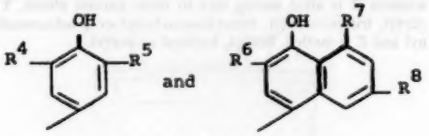
UNITED STATES PATENTS

3,540,911	11/1970	Lin	260/326.14 R
3,829,322	8/1974	Ozutsumi et al.	260/326.14 R

1. A compound of the formula



wherein R^1 is hydrogen, alkyl containing 1 to 20 carbon atoms or a hydrogen-bonding group forming a 5-, 6- or 7-membered intramolecular hydrogen-bonded ring with the adjacent —NH— and selected from carboxy, o-hydroxyphenyl, bis trifluoromethyl carbinol, —NH—SO_2—R and —SO_2—NH—R′ wherein said R and R′ each are hydrocarbon groups selected from alkyl containing 1 to 20 carbon atoms, phenyl, naphthyl, alkylsubstituted phenyl containing up to 20 carbon atoms and phenyl-substituted alkyl containing up to 20 carbon atoms; R^2 is hydrogen or a hydrogen-bonding group forming a 5-, 6- or 7-membered intramolecular hydrogen-bonded ring with the adjacent —NH— and selected from carboxy, hydroxy, o-hydroxyphenyl, bis trifluoromethyl carbinol, —NH—SO_2—R and —SO_2—NH—R′ wherein R and R′ have the same meaning given above, not more than one of R^1 and R^2 being a hydrogen-bonding group; R^3 is hydrogen or alkoxy containing 1 to 18 carbon atoms; B is selected from



wherein R^4 is hydrogen or alkyl containing 1 to 20 carbon atoms, R^5 is hydrogen, alkyl containing 1 to 20 carbon atoms or a hydrogen-bonding group forming a 5-, 6- or 7-membered intramolecular hydrogen-bonded ring with the adjacent —OH and selected from carboxy, hydroxy, o-hydroxyphenyl, bis trifluoromethyl carbinol, —NH-SO_2—R and —SO_2—NH-R′ wherein R and R′ have the same meaning given above, R^6 is hydrogen, alkyl containing 1 to 20 carbon atoms or a hydrogen-bonding group forming a 5-, 6- or 7-membered intramolecular hydrogen-bonded ring with the adjacent —OH and selected from carboxy, hydroxy, o-hydroxyphenyl, bis trifluoromethyl carbinol, —NH—SO_2—R and —SO_2—NH—R′ wherein R and R′ have the same meaning given above, R^7 is hydrogen or a hydrogen-bonding group forming a 5-, 6- or 7-membered intramolecular hydrogen-bonded ring with the adjacent —OH and selected from carboxy, hydroxy, bis trifluoromethyl carbinol, —NH-SO_2—R and —SO_2—NH-R′ wherein R and R′ have the same meaning given above, not more than one of R^6 and R^7 being a hydrogen-bonding group, R^8 is hydrogen or alkoxy containing 1 to 18 carbon atoms, and X represents the atoms necessary to complete a ring-closing moiety selected from phthalide and naphthalide.

B 459,381

PROCESS OF MANUFACTURING HEAT RESISTING STEEL SHEET FOR DEEP DRAWING

Kazuhisa Kinoshita, and Tetsuo Yamaguchi, both of Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 332,582, Dec. 29, 1972, Pat. No. 3,826,692, which is a continuation-in-part of Ser. No. 79,685, Oct. 9, 1970, abandoned. This application Apr. 9, 1974, Ser. No. 459,381

Claims priority, application Japan, Oct. 13, 1969, 44-81399

Int. Cl.² C21D *9/48*

U.S. Cl. 148—36 **7 Claims**

References Cited

UNITED STATES PATENTS

3,348,981	10/1967	Goda et al.	148/36
3,420,718	1/1969	Fukuda et al.	148/12.1

1. An aluminum-killed cold rolled steel sheet suitable for deep drawing consisting essentially of, in percent by weight:

C	up to	0.10
Si	"	0.15
Mn	"	0.25
Mo	"	0.8
Al	"	0.5
Cr		0.4 – 1.5,

and having a ratio of Mn to S of more than 8, said steel sheet having good heat resistance at high temperatures of up to 600°C.

B 464,593

HAIR BLEACHING COMPOSITIONS CONTAINING AN ARGININE COMPOUND

Richard B. Knohl, and Eugene Zeffren, both of Wyoming, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 129,554, March 30, 1971, abandoned. This application Apr. 26, 1974, Ser. No. 464,593
Int. Cl.² A61K *7/135*
U.S. Cl. 424—62 **5 Claims**

References Cited
UNITED STATES PATENTS

2,283,350	5/1942	Baum	424/62
2,991,228	7/1961	Lustig	424/62
3,190,803	6/1965	Vogt	424/62
3,206,364	9/1965	Purlee	424/62
3,378,444	4/1968	Swanson	424/62
3,649,159	3/1972	Cohen et al.	424/62 X

FOREIGN PATENTS OR APPLICATIONS

466,172	5/1937	United Kingdom	424/62
859,276	1/1961	United Kingdom	424/62
1,033,737	6/1966	United Kingdom	424/177
940,799	6/1948	France	424/62
1,255,863	12/1967	Germany	424/72
78,053	4/1955	Netherlands	424/62

1. A hair bleaching composition comprising: (1) from about 0.1 to about 20% by weight of an arginine compound selected from the group consisting of arginine, arginine carbonate, arginine chloride, and arginine phosphate; (2) from about 1 to about 10% by weight of a water-soluble peroxide compound; and (3) from about 1 to about 10% by weight of a water-soluble hair bleaching accelerator selected from the group consisting of ammonium peroxydisulfate, alkali metal peroxydisulfate, ammonium peroxydiphosphate, alkali metal peroxydiphosphate, and mixtures thereof, said composition having a pH of from about 8 to about 11 in aqueous solution.

B 467,328

EXTRACTION OF CARBOXYLIC ACIDS FROM DILUTE AQUEOUS SOLUTIONS

Robert R. Grinstead, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 285,546, Aug. 31, 1972, Pat. No. 3,816,524. This application May 6, 1974, Ser. No. 467,328
Int. Cl.² C07C *51/48*
U.S. Cl. 260—527 R **3 Claims**

References Cited
UNITED STATES PATENTS

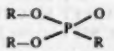
3,470,238	9/1969	Asano et al.	260/526 N

1. A process for the recovery of lower carboxylic acids from dilute aqueous solution, comprising:

contacting said aqueous solution with a water-immiscible, liquid organic solvent for said acid,

said aqueous solution having a lower carboxylic acid content of two percent or less by weight, said content consisting of one or more two to four carbon mono- or dicarboxylic acids substituted with from zero to three chlorines or fluorines, or with zero or one hydroxyl, oxo, cyano, methoxyl or ethoxyl group, the carbon to oxygen atomic ratio in each of said acids being not less than 1.0 nor greater than 2.0,

said organic solvent comprising a total of at least one weight percent of one or more dialkyl alkyl phosphonate polar extractants of the formula:



wherein each R is a C_8 to C_{12} alkyl group and the total number of carbons in the molecule is from 10 to 36,

and separating the resulting loaded extractant and raffinate solutions.

B 470,601

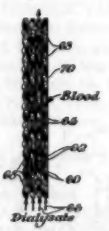
DIALYZER COIL WITH POROUS SUPPORT FOR MEMBRANE

Frederick W. Miller, III, Glenmore, Pa., assignor to Extracorporeal Medical Specialties, Inc., King of Prussia, Pa.

Filed May 16, 1974, Ser. No. 470,601
Int. Cl.² B01D *31/00*
U.S. Cl. 210—321 A **9 Claims**

References Cited
UNITED STATES PATENTS

3,077,268	2/1963	Gobel et al.	210/494 X
3,357,565	12/1967	Burger	210/494 X
3,712,474	1/1973	Martinez	210/494 X
3,724,673	4/1973	Ryon	210/500 M
3,738,813	6/1973	Esmund	210/494 X



1. A dialyzer coil for use in artificial kidney machines comprising an elongated tube of membrane material, a length of porous material supporting the tube of membrane material in a generally flattened and rolled up configuration to define a first passage inside the tube of membrane material which is a relatively long, spirally directed one, linear in cross-section, and a second passage outside the tube of membrane material which is a relatively short, axially directed one, spiral in cross-section, the length of porous material occupying one of the passages between two adjacent layers of membrane material to provide turbulent flow for dialysate, the other passage between two adjacent layers of membrane material being free of obstructions to provide smooth flow for blood, means for connecting each end of the dialysate flow passage with the dialysis system of an artificial kidney machine, means for connecting each end of the blood flow passage with tubing for communication with the circulatory system of a patient, the porous material being selected from the group consisting of rigidized thermoplastic or thermosetting materials composed of sintered granules or foamed open cells, the majority of the pores communicating with the surface on each side of the porous material being sufficiently small that the membrane material under normal operating pressures does not distend into individual pores whereby the material between the pores controls the membrane distention to conform with the overall surface shape of the porous material, the length of porous material having an average thickness along its edge portions which is no greater than the average thickness along its mid-

portion, and having an embossed configuration substantially covering one side thereof to define the blood flow passage.

B 475,385
CARPET MACHINE

Charles A. Wethington, 555 Lucerne Drive, Spartanburg, S.C. 29302

Filed June 8, 1974, Ser. No. 475,385
Int. Cl.² D04H *11/08*
U.S. Cl. 156—435 **3 Claims**

References Cited
UNITED STATES PATENTS

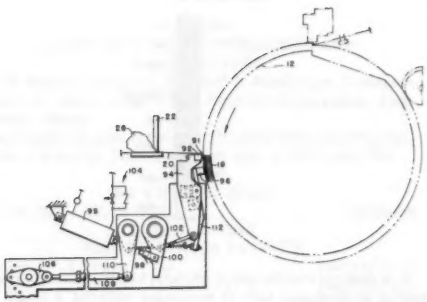
1,784,552	12/1930	Smith et al.	156/435
2,116,048	5/1938	Smith	156/435
2,831,525	4/1958	Cole	156/471
3,542,625	11/1970	Vernier	156/435

FOREIGN PATENTS OR APPLICATIONS

1,560,873	10/1969	Germany	156/435
1,407,101	6/1965	France	156/72 M

OTHER PUBLICATIONS

1560873, Oct. '69, Germany, Kroll, Translation.
1407101, June '65, France, Giroudtreres, Translation.



1. Apparatus to produce a bonded pile fabric comprising: a rotor, means to rotate said rotor, a set of blade members slidably mounted in said rotor, a second blade member slidably mounted with respect to said rotor and operably associated with said blade members in said rotor, means to supply yarn between said set of blade members and said second blade member, means to slide said second blade member downwardly at a predetermined time to bend the yarn over one blade of said set of blades, means to slide upwardly the blade of said set of blades next adjacent to the blade over which the yarn is bent to form a loop in said yarn, an elongated backing material guiding means spaced from and supplying an adhesive backed backing material into contact with said formed loop, and means operably associated with said elongated guiding means to move and hold said elongate guiding means and the backing material against the previously formed loops when the machine has stopped.

B 479,969
AUTOMATIC DISHWASHING DETERGENT COMPOSITION

Edward John Maguire, Jr., Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed June 17, 1974, Ser. No. 479,969
Int. Cl.² C11D *7/54, 7/56*
U.S. Cl. 252—105 **15 Claims**

References Cited
UNITED STATES PATENTS

3,706,670	12/1972	Gray	252/105 X
3,741,901	6/1973	Zitter	252/105 X

1. A granular cleaning composition, particularly suitable for use in automatic dishwashers, having improved cleaning and anti-redeposition properties, consisting essentially of:

a. from about 4% to about 20% by weight of an alkoxylated nonionic surface-active agent, wherein said alkoxy moiety is selected from the group consisting of ethylene oxide, propylene oxide and mixtures thereof;

b. from about 5% to about 20% by weight of a sulfonated aromatic compatibilizing agent having a critical micelle concentration greater than about 1% by weight at 25°C, wherein the weight ratio of said alkoxylated nonionic surface-active agent to said sulfonated compatibilizing agent is in the range from about 2:5 to about 5:3;

c. from about 15% to about 60% by weight of a mixture of (1) a water-soluble alkali metal sulfite, ammonium sulfite, substituted ammonium sulfite or mixtures thereof and (2) a water-soluble alkali metal sulfate, ammonium sulfate, substituted ammonium sulfate or mixtures thereof, said components being present in a weight ratio of sulfite to sulfate from about 1:4 to about 2:1;

d. which is substantially free of a chlorine bleach component.

B 484,419
SULFITES OF AROMATIC GLYCOLIC AMIDES

Adolf Fischer, Mutterstadt; Hanspeter Hansen, Ludwigshafen, and Wolfgang Rohr, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed July 1, 1974, Ser. No. 484,419
Int. Cl.² C07C *137/00*
U.S. Cl. 260—456 NS **4 Claims**

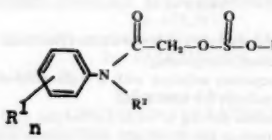
References Cited
UNITED STATES PATENTS

2,917,502	12/1959	Schwyzer et al.	260/456 NS

OTHER PUBLICATIONS

Baker et al., Chem. Abstract, 64, 651 h (1966).

1. A sulfite of an aromatic glycolic amide of the formula



wherein R^1 is hydrogen or alkyl of 1 to 3 carbon atoms, n is one of the integers 0, 1, 2, 3 and 4, R^2 is alkyl of 1 to 4 carbon atoms, and R^3 is alkyl of up to 6 carbon atoms.

B 493,955

STABILIZATION OF COPPER COMPLEXES OF 6-METHOXY-1-PHENAZINOL 5,10-DIOXIDE

Martin Howard Infeld, Montclair, and Harold Leon Newmark, Maplewood, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 141,382, May 7, 1971, abandoned. This application Aug. 1, 1974, Ser. No. 493,955

Int. Cl.[2] A61K *31/555*

U.S. Cl. 424—245 **8 Claims**

References Cited

UNITED STATES PATENTS

3,586,674 6/1971 Leimgruger et al. 424/245

OTHER PUBLICATIONS

Gregory, T., "Uses & Applications of Chem. & Related Materials" (1939).

8. The pharmaceutical composition as in claim 6 containing, in percents by weight based on the total weight of the composition, 0.5% of the copper II complex of 6-methoxy-1-phenazinol 5,10-dioxide, 0.019% of cupric acetate monohydrate and 0.2% of sodium acetate trihydrate, said cupric acetate monohydrate and sodium acetate trihydrate provided from the aqueous stabilizer-buffer solution.

B 507,456

GLASS-FIBER-REINFORCED THERMOPLASTIC MOLDING COMPOSITIONS SHOWING IMPROVED FLOWABILITY AND TOUGHNESS

Rolf Wurmb, Heidelberg; Dietrich-Wolfgang Mueller, Dossenheim; Hans Georg Dorst, Deidesheim; Klaus Bronstert, Carlsberg, and Rainer Theysohn, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Sept. 19, 1974, Ser. No. 507,456

Int. Cl.[2] C08L *9/00*

U.S. Cl. 260—28 R **7 Claims**

References Cited

UNITED STATES PATENTS

3,787,344 1/1974 Kenaga et al. ..... 260/28.5 A
3,826,074 7/1974 Uffner 260/28

1. Glass-fiber-reinforced thermoplastic molding compositions containing from about 10 to 60% by weight of glass fibers and containing from 0.1 to 2% by weight, based on the weight of the molding composition, of a polyolefin wax having a molecular weight of from about 1,000 to 20,000 to which from 2 to 50% by weight of polar side chains have been grafted, said side chains comprising copolymerized styrene and maleic anhydride, said chains containing styrene and maleic anhydride in alternating relationship.

B 520,514

(TYR[3], TYR[14])-SRIF AND INTERMEDIATES

Dimitrios Sarantakis, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Nov. 4, 1974, Ser. No. 520,514

Int. Cl.[2] C07C *103/52;* **A61K** *37/00*

U.S. Cl. 260—112.5 R **4 Claims**

References Cited

UNITED STATES PATENTS

3,842,066 10/1974 McKinley et al. 260/112.5
3,842,067 10/1974 Sarantakis 260/112.5

1. A compound selected from those of the formula:

L-Ala-Gly-L-Tyr-L-Lys-L-Asn-L-Phe-L-Phe-L-Trp-
-Lys-L-Thr-L-Phe-L-Thr-L-Ser-L-Tyr-OH (I)

and

R-L-Ala-Gly-L-Tyr(R^1)-L-Lys(R^2)-L-Asn-L-Phe-L-he-L-Trp-L-Lys(R^3)-L-Thr(R^4)-L-Phe-L-Thr(R^5)-
-Ser(R^6)-L-Tyr(R^7)-X (II)

and the non-toxic salts thereof, wherein:

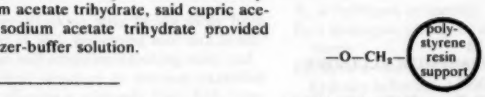
R is selected from the class consisting of H and an α-amino protecting group;

R^1 and R^7 are selected from the class consisting of hydrogen and a protecting group for the phenolic hydroxyl group of tyrosine selected from tetrahydropyranyl, tert-butyl, trityl, benzyl, 2,6-dichlorobenzyl, benzyloxycarbonyl and 4-bromobenzyloxycarbonyl;

R^2 and R^3 are selected from the class consisting of hydrogen and a side chain amino protecting group;

R^4, R^5 and R^6 are selected from the class consisting of hydrogen and a protecting group for the alcoholic group selected from acetyl, benzoyl, tert-butyl, trityl, benzyl and benzyloxycarbonyl; with the proviso that at least one of R, R^1, R^2, R^3, R^4, R^5, R^6 and R^7 is other than hydrogen;

X is selected from the class consisting of hydroxy, methoxy and



wherein said polystyrene is cross linked through the phenyl group on each second carbon atom of the alkyl chain of said polystyrene.

B 520,658

POURABLE ELASTOMERIC PARTICLES

Gerhard Berg; Karl-Heinz Nordsiek; Gunter Maahs, and Wilhelm Schanzer, all of Marl, Germany, assignors to Chemische Werke Huels Aktiengesellschaft, Marl, Germany

Division of Ser. No. 270,003, July 10, 1972, Pat. No. 3,846,365. This application Nov. 4, 1974, Ser. No. 520,658

Claims priority, application Germany, July 15, 1971, 2135266

Int. Cl.[2] C08K *3/04, 3/36, 5/01*

U.S. Cl. 260—33.6 AQ **12 Claims**

References Cited

UNITED STATES PATENTS

3,326,848 6/1967 Clemens et al. 260/34.2
3,849,363 11/1974 Maass et al. 260/42.37
R25,136 3/1962 Carlson ..... 252/62.1 P

OTHER PUBLICATIONS

Noble–*Latex in Industry*, (2nd Ed.) (Rubber Age) (N.Y.) (1953), pp. 357–359 and 377–381.

Morton–*Introduction to Rubber Technology*," (*Reinhold*) (*N.Y.*) (*1959*), *pp. 34–39, 234–235.*

1. A composition of matter capable of being compounded and sulfur cured to form a rubbery vulcanizate, said composition comprising discrete, finely divided, tack-free, pourable, filler-containing elastomer particles having an average diameter of 1-500 microns and containing a solid, finely divided elastomer filler uniformly dispersed therein, said composition when compounded and sulfur cured forming a vulcanizate exhibiting increased tensile strength as compared to an otherwise identical vulcanizate prepared by mechanically mixing the elastomer and filler, and being prepared by:

gradually introducing an admixture of (*a*) an aqueous emulsion of 1-50 percent by weight of an elastomer selected from the group consisting of polybutadienes having a 1,2-content of 15–75 percent, polyalkenamers, solution polymerized styrenebutadiene copolymers, ethylene-propylene copolymers and ethylenepropylene-diene copolymers, said aqueous emulsion consisting essentially of (i) a solution of said elastomer dissolved in a volatile, inert organic solvent having a boiling point below 100° C, (ii) an elastomer emulsifying amount of a quaternary ammonium salt cationic surfactant and (iii) water, the volume

ratio of the aqueous phase to the organic solvent phase of said emulsion being from about 0.25:1 to about 2.5:1 respectively, and (*b*) an aqueous suspension or dispersion of a solid, finely divided elastomer filler, the volume ratio of aqueous filler to said aqueous emulsion in said admixture being from about 0.2:1 to about 2.0:1, into a 0.1 to 5 fold volume of an aqueous alkali silicate solution containing 2–20 moles of SiO_2 per mole of said quaternary ammonium salt while maintaining said silicate solution at a pH greater than 2 to avoid a condensation reaction of the silicate anions, and

simultaneously evaporating said volatile organic solvent to form said filler-containing elastomer particles.

B 521,612

METHOD OF PURIFYING AMMONIUM FLUORIDE SOLUTIONS

Marian Briska, Boeblingen, and Wolfgang Hoffmeister, Gaertringen, both of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 7, 1974, Ser. No. 521,612

Claims priority, application Germany, Dec. 7, 1973, 2360974

Int. Cl.² C01C *1/16*

U.S. Cl. 423—471 **9 Claims**

References Cited

UNITED STATES PATENTS

2,780,522	2/1957	Gloss et al.	423/470
2,816,818	12/1957	Gross	423/470
3,201,193	8/1965	Baumann	423/471

1. Method of removing metal ion impurity traces, including arsenic and the noble metals, from an ammonium fluoride solution, comprising suspending manganese oxide hydrate, $MnO(OH)_2$, in the ammonium fluoride solution, such that said manganese oxide hydrate absorbs said impurity traces so that said impurity traces remaining in said solution are less than 2×10^{-6} percent by weight, and then removing said manganese oxide hydrate.

B 527,972

WATER SOLUBLE FLUXES

Donald J. Lazzarini, Binghamton, and Frank H. Sarnacki, Johnson City, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 29, 1974, Ser. No. 527,972

Int. Cl.² B23K *35/34*

U.S. Cl. 148—23 **11 Claims**

References Cited

UNITED STATES PATENTS

2,493,372	1/1950	Williams	148/25
3,832,242	8/1974	Cuthbert	148/26

1. A fluxing composition comprising:

from about 2 to 8 percent by weight of a chelating agent, and

from about 92 to 97 percent by weight of glycerol.

B 539,374

1-[10,11-DIHYDRO-DIBENZO[B,F]-THIEPIN-10-YL]-4-(ALKYNYLALKYL)-PIPERAZINES

Max Gerecke, Reinach, Switzerland; Jean-Pierre Kaplan, Les-Plessis-Robinson, France, and Emilio Kyburz, Reinach, Switzerland, assignors to Hoffman-La Roche Inc., Nutley, N.J.

Filed Jan. 8, 1975, Ser. No. 539,374

Claims priority, application Switzerland, Jan. 14, 1974, 449/74; Nov. 15, 1974, 15249/74

Int. Cl.² C07D *295/10, 295/12*

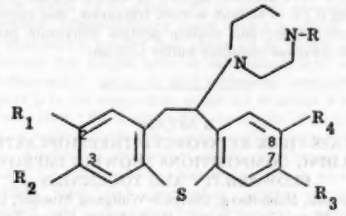
U.S. Cl. 260—268 TR **4 Claims**

References Cited

UNITED STATES PATENTS

3,351,599	11/1967	Protiva et al.	260/268 TR
3,379,729	4/1968	Protiva et al.	260/268 TR
3,600,391	8/1971	Mastursi et al.	260/268 TR
3,725,409	4/1973	Protiva et al.	260/268 TR

1. A compound of the formula



wherein R is lower alkynylalkyl, hydroxy-lower alkyl-alkynylalkyl or alkanoyloxy-lower alkylalkynylalkyl, and one of the two symbols R_1 and R_2 or R_3 and R_4 is hydrogen and the other is halogen, methyl, methoxy, methylthio, trifluoromethyl, methanesulfonyl or dimethylsulfamoyl, or a pharmaceutically acceptable acid addition salt thereof.

B 554,164

PROCESS FOR PRODUCING SEMICONDUCTOR DEVICES

Juergen Graul, Gruenwald, and Helmuth Murrmann, Ottobrunn, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Feb. 28, 1975, Ser. No. 554,164

Claims priority, application Germany, Mar. 1, 1974, 2409910

Int. Cl.² H01L *21/76, 27/04*

U.S. Cl. 148—187 **11 Claims**

References Cited

UNITED STATES PATENTS

3,719,535	3/1973	Zoroglu	148/187
3,755,014	8/1973	Appels	148/175
3,899,372	8/1975	Esch	156/17
3,900,350	8/1975	Appels	427/94

OTHER PUBLICATIONS

Rideout et al., *IBM Tech. Disclosure Bulletin*, "Fabricating . . . Substrates," Vol. 17, No. 3, pp. 949–951 (Aug. 1974).

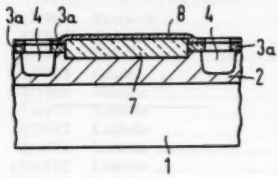
Appels et al., *Phillips Research Reports*, "Local Oxidation of Silicon," No. 26, pp. 157–165 (1971).

1. In a process for producing a semiconductor device wherein a trench-like recess is formed in the surface of a Si crystal, a heat-resistant oxidation-blocking layer is applied onto the Si surface at least along one edge of said recess and

the Si surface within said recess free of said oxidation-blocking layer is coated with a relatively thick SiO_2 layer via thermal oxidation, the improvement comprising:

confining said heat-resistant oxidation-blocking layer to a strip running directly along the edge of said recess;

applying a layer of SiO_2 directly onto the Si surface at the



edge of said oxidation-blocking strip facing away from said recess, said layer of SiO_2 projecting into said Si surface more deeply than said oxidation-blocking strip; and

subjecting the so-obtained structure to thermal oxidation conditions sufficient to grow a relatively thick SiO_2 layer onto the uncovered Si surface within said recess.

B 554,291

ANTIBIOTIC G-52 AND METHOD FOR THE PRODUCTION THEREOF

Marvin J. Weinstein; Gerald H. Wagman, both of East Brunswick, and Joseph A. Marquez, Montclair, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 271,838, July 14, 1972, abandoned. This application Feb. 28, 1975, Ser. No. 554,291

Int. Cl.² C07H *15/22*

U.S. Cl. 260—210 AB **5 Claims**

References Cited

UNITED STATES PATENTS

3,651,042	3/1972	Marquez et al.	260/210 AB
3,832,286	8/1974	Weinstein et al.	260/210 AB

1. A composition of matter selected from the group consisting of Antibiotic G-52, non-toxic acid addition salts and Schiff base-oxazolidine derivatives thereof.

B 554,380

OXAZOLINE AND/OR OXAZINE-MODIFIED POLYMERS

Thomas A. Chamberlin, and Norman L. Madison, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 3, 1975, Ser. No. 554,380

Int. Cl.² C08G *22/44*

U.S. Cl. 260—2.5 B **23 Claims**

References Cited

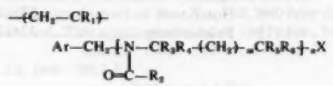
UNITED STATES PATENTS

2,614,099	10/1952	Bauman et al.	260/88.1
3,563,920	2/1971	Tomalia et al.	260/2
3,709,805	1/1973	Krauch et al.	260/2.5 R X
3,716,520	2/1973	Tomalia	260/47 EN
3,723,451	3/1973	Tomalia et al.	260/307 F
3,784,594	1/1974	Papa et al.	260/2.5 AM
3,786,116	1/1974	Milkovich et al.	260/885
3,791,999	2/1974	Yutaka Fuchiwaki et al.	260/2.5 M
3,798,836	3/1974	Rubens et al.	260/2.5 R
3,816,170	6/1974	Mudde	260/2.5 R X
3,833,523	9/1974	Tariel et al.	260/2.5 R
3,852,224	12/1974	Bridgeford	260/2.5 N X
3,862,077	1/1975	Schulz et al.	260/874 X
3,875,087	4/1975	Gruffaz et al.	260/2.5 N
3,896,092	7/1975	Epton et al.	260/2.5 R X
R27,026	1/1971	Alfrey et al.	260/2.5

OTHER PUBLICATIONS

Chem. Abs. 71:P114126s, 72:P101932x, 71:P71180k, 72:P133548t, 73:P36516u, 74:P64906k, 74:142406p, 75:P6624b.

1. A liquid-permeable, water-insoluble, synthetic resinous body, capable of removing a phenol from a phenol solution in contact therewith, comprising a cross-linked vinyl-addition polymer whose backbone contains a plurality of units corresponding to the formula



wherein:

R_1 is hydrogen or methyl;

R_2 is hydrogen, phenyl or alkyl of from 1 to about 24 carbon atoms;

R_3–R_6 are each independently hydrogen, lower alkyl or hydroxy-substituted lower alkyl, with the proviso that at least two of R_3–R_6 are hydrogen;

Ar is a carbocyclic aromatic nucleus;

m is 0 or 1;

n is an integer of at least 1; and

X is Cl, Br, I, or OH.

B 563,070

1-PIPERAZINO-6-(2-PYRIDYL)-4H-S-TRIAZOLO[4,3-A][1,4]BENZODIAZEPINES

Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 28, 1975, Ser. No. 563,070

Int. Cl.² C07D *295/12*

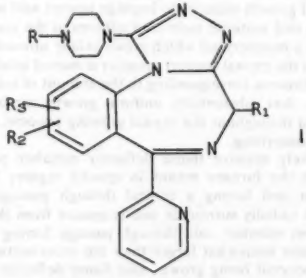
U.S. Cl. 260—268 TR **8 Claims**

References Cited

UNITED STATES PATENTS

3,503,957	3/1970	Drukker et al.	260/268 TR
3,842,090	10/1974	Gall et al.	260/268 TR
3,846,421	11/1974	Meguro et al.	260/268 TR
3,870,714	3/1975	Gagneux et al.	260/268 TR
3,878,205	7/1972	Gagneux et al.	260/268 TR
3,894,025	7/1975	Hester, Jr.	260/268 TR

1. A compound of the formula II:



II

wherein R is hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, or β-hydroxyethyl; wherein R_1 is hydrogen or alkyl defined as above; and wherein R_2 and R_3 are hydrogen, alkyl as definend above, fluoro, chloro, bromo, nitro, or trifluoromethyl, or the pharmacologically acceptable acid addition salts thereof.

B 563,165

APPARATUS FOR PRODUCING MONOCRYSTALS BY THE VERNEUIL TECHNIQUE

Richard Falckenberg, Unterhaching, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 28, 1975, Ser. No. 563,165

Claims priority, application Germany, Mar. 28, 1974, 2415110

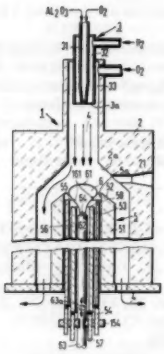
Int. Cl.² B01J 17/24

U.S. Cl. 23—273 V 5 Claims

References Cited

UNITED STATES PATENTS

2,792,287	5/1957	Moore, Jr. et al.	23/273 V
3,012,374	12/1961	Merker	49/77
3,282,654	11/1966	Hutcheson	23/273 V
3,876,382	4/1975	Falckenberg	23/273 V



1. An apparatus for producing monocrystals having a relatively large cross-section by the Verneuil technique wherein a seed crystal is mounted on a movable crystal support member within a furnace means having a burner guiding flame gases and crystal growth material to impinge against said seed crystal so that said material melts and adheres to the seed crystal and forms a monocrystal which grows axially upwardly therefrom while the crystal support member is moved axially downwardly a distance corresponding to the amount of axial crystal growth so that substantially uniform growth conditions are maintained throughout the crystal growing process; the combination comprising:

a relatively massive flame deflector member positioned within the furnace means in spaced registry from the burner and having a central through passage therein which radially surrounds and is spaced from the crystal support member, said through passage having an outer diameter somewhat larger than the cross-section of the monocrystal being grown, said flame deflector member having a mass relative to the monocrystal being grown sufficient to form a heat reservoir for said monocrystal after burner shut-down, said flame deflector member having upper conical outwardly beveled surfaces extending radially away from said through passage therein for laterally deflecting flame gases impinging on the upper surface of the monocrystal being grown; and

at least on axially movable insert member positioned within said through passage of the deflector member and radially spaced from the crystal support member and said deflector member, said insert member being selectively movable in relation to said deflector member and said crystal support member.

B 571,638

1-ARYL-3,4-DIHYDRO-2(1H)-ISOQUINOLINE CARBONYL CHLORIDES

Peter K. Yonan, Morton Grove, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 381,505, July 23, 1973, Pat. No. 3,905,982. This application Apr. 25, 1975, Ser. No. 571,638

Claims priority, application Greece, July 18, 1974, 4872

Int. Cl.² C07D 217/06

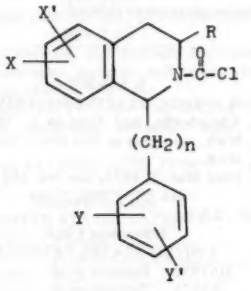
U.S. Cl. 260—287 D 10 Claims

References Cited

UNITED STATES PATENTS

3,483,206	12/1969	Werner	260/287
3,524,858	8/1970	Kaminsky et al.	260/287
3,634,429	1/1972	Leimgruber et al.	260/287
3,666,763	5/1972	Grethe	260/289

1. A compound of the formula



wherein X and X′ are each selected from the group consisting of hydrogen, lower alkoxy, benzyloxy, and methyl, or X and X′ together represent a single methylenedioxy or ethylenedioxy group; Y and Y′ are each selected from the group consisting of hydrogen, halogen, lower alkoxy, and methyl; *n* is selected from the group consisting of 0 and 1; and R is selected from the group consisting of hydrogen and methyl.

B 584,997

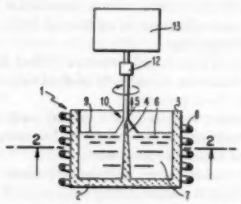
METHOD FOR DRAWING A MONOCRYSTAL FROM A MELT FORMED ABOUT A WETTABLE PROJECTION

Theodore F. Ciszek, Salt Point, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 9, 1975, Ser. No. 584,997
Int. Cl.² C01B *33/02*; B01J *17/18*
U.S. Cl. 156—608 9 Claims

References Cited
UNITED STATES PATENTS

3,002,824	10/1961	Francois	156/608
3,033,660	5/1962	Okkerse	156/617
3,077,384	2/1963	Enk	23/273 SP
3,096,158	7/1963	Gaule	156/608
3,291,574	12/1966	Pierson	23/273 SP
3,591,348	7/1971	LaBelle	156/608
3,650,703	3/1972	LaBelle	156/608
3,687,633	8/1972	LaBelle	23/273 SP
3,701,636	10/1972	LaBelle	156/608
3,765,843	10/1973	LaBelle	23/273 SP
3,853,489	12/1974	Bailey	23/301 SP



1. A method of growing a monocrystalline material of controlled cross-section comprising:

A. forming a melt of said material in a crucible about a submerged solid projection wettable about its entire surface by said melt with said projecting having its upper distal end extending above the surface of said melt a distance to form a raised meniscus of said melt thereon, and

B. drawing a crystal of said melt away from said raised meniscus of said melt, while maintaining the level of said melt below the distal end of said projection said distance maintaining thereon said raised meniscus of said melt by surface tension in spaced relation to the side walls of said crucible.

B 632,416

HYDROCARBON INTERPOLYMER COMPOSITIONS

Arthur William Anderson, Wilmington, and Gelu Stoeff Stamatoff, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 568,707, March 1, 1956, abandoned. This application Jan. 4, 1957, Ser. No. 632,416
Int. Cl.² C08F *210/14*, *210/16*
U.S. Cl. 260—88.2 F 15 Claims

References Cited
UNITED STATES PATENTS

2,200,429	5/1940	Perrin et al.	260/88.1
2,396,785	3/1946	Hanford	260/94.9
2,832,759	4/1958	Nowlin et al.	260/94.9
2,839,515	6/1958	Davison et al.	260/88.1
2,839,518	6/1958	Brebner	260/94.9
2,862,917	12/1958	Anderson et al.	260/94.9
2,905,645	9/1959	Anderson et al.	252/429

FOREIGN PATENTS OR APPLICATIONS

538,782	12/1955	Belgium	260/94.9
526,101	5/1955	Italy	260/94.9

1. An interpolymer composed of interpolymerized comonomers consisting essentially of ethylene and at least one normal aliphatic monoolefinic hydrocarbon containing from 5 to 10 carbon atoms per molecule, the proportion of said monoolefinic hydrocarbon being from 3 to 7% of the weight of the interpolymer, said interpolymer having a melt index within the range of 0.3 to 20, and, when in the form of a film, an Elmendorf tear strength in the range of 150 to 400 grams per mil, and a density of 0.93 to 0.94.

B 073,017

AUTOMATIC HUE-CONTROL APPARATUS FOR COLOR TELEVISION RECEIVERS

Yoshitomi Nagaoka, Neyagawa, and Michio Furuhashi, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 17, 1970, Ser. No. 73,017

Claims priority, application Japan, Sept. 20, 1969, 44-74790; Sept. 20, 1969, 44-74799; Sept. 20, 1969, 44-75556; Apr. 20, 1970, 45-34164; Apr. 20, 1970, 45-34166

Int. Cl.[2] H04N *9/12*

U.S. Cl. 358—28 **13 Claims**

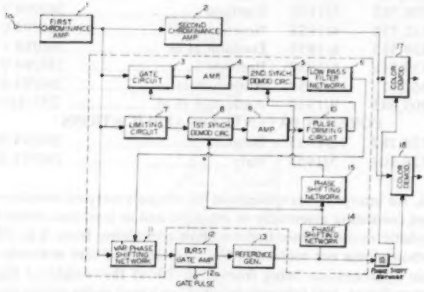
References Cited

UNITED STATES PATENTS

2,888,514	5/1959	Pritchard	178/5.4 HE
3,525,802	8/1970	Whiteneir, Jr.	178/5.4 HE

OTHER PUBLICATIONS

"Automatic Controls for Color Television" by Z. Wiencek in Electronics May 15, 1959, pp. 58–59.



12. In a color television system, the method of altering the hue parameter in a delivered signal comprising the steps of detecting the value of said parameter at which a time average characteristic of said delivered signal occurs and processing said signal so that said value represents a predetermined hue.

B 444,437

DECODER DRIVER CIRCUIT FOR MONOLITHIC MEMORIES

George Sonoda, Poughkeepsie, N.Y., assignor to IBM Corporation, Armonk, N.Y.

Continuation of Ser. No. 267,302, June 29, 1972, abandoned. This application Feb. 21, 1974, Ser. No. 444,437

Int. Cl.[2] H03K *19/08, 19/34*

U.S. Cl. 307—205 **7 Claims**

References Cited

UNITED STATES PATENTS

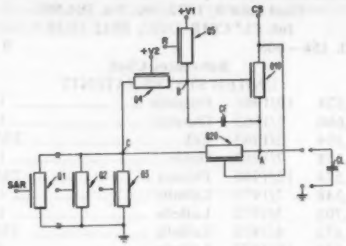
3,564,290	2/1971	Sonoda	307/251
3,567,968	3/1971	Booher	307/251
3,579,275	5/1971	Polkinghorn et al.	307/251
3,629,618	12/1971	Fujimoto	307/251 X
3,665,473	5/1972	Heimbigner	307/215 X
3,702,926	11/1972	Picciano et al.	307/251 X
3,758,761	9/1973	Henrion	307/205 X
3,798,616	3/1974	Spence	307/238 X
3,801,964	4/1974	Palfi et al.	307/238 X

OTHER PUBLICATIONS

Hsieh et al., "Mosfet Storage Array Addressing System," IBM Tech. Discl. Bull.; Vol. 13, No. 8; pp. 2383–2384; 1/1971.

DeSimone "Low–Power Mosfet Decoder," IBM Tech. Discl. Bull.; Vol. 13, No. 1, pp. 260–261; 6/1970.

Linton et al.; "FET Decoder Circuit;" IBM Tech. Discl. Bull.; Vol. 12, No. 12, p. 2082; 5/1970.



1. A decoder driver circuit for driving a capacitive load, such as a word line or a bit line in a monolithic memory, and for preventing false selection of undesired lines, said decoder driver circuit comprising:

a decode circuit connected between a first fixed potential and a first node for selectively connecting said first node to said first fixed potential;

isolation means connected in a circuit path between said decode circuit and a second node for reducing intrinsic capacitance at said second node;

means connected between said second node and a second fixed potential for connecting said second node to said second fixed potential in response to a timing signal;

a first FET having a drain to source path and a gating electrode, the gating electrode being connected to said second node, the drain to source path being connected between a source of pulses and an output node;

a feedback capacitance connected between the output node and the gating electrode of said first FET;

a capacitive load, such as a work line or a bit line in a monolithic memory, connected to said output node; and

a second FET having a drain to source path and a gating electrode, the gating electrode being connected to said source of pulses, the drain to source path being connected between said output node and said circuit path between said decode circuit and said second node, said second FET forming a discharge path between said output node and said first fixed potential when said first node is connected to said first potential by said decode circuit, thereby maintaining said first FET non-conducting and said output node connected to said first fixed potential when said decoder driver circuit is not selected.

B 466,318

DYNAMIC STABILIZER FOR SYNCHRONOUS MACHINES HAVING TORSIONAL OSCILLATIONS AND METHOD

William H. South, McKeesport, and Lee A. Kilgore, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 2, 1974, Ser. No. 466,318

Int. Cl.[2] H02H *7/06;* **H02P** *9/00*

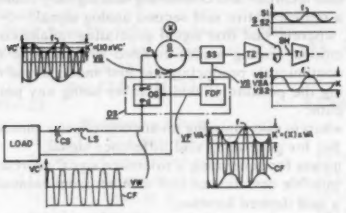
U.S. Cl. 322—25 **24 Claims**

References Cited

UNITED STATES PATENTS

2,767,367	10/1956	Black	322/32
2,854,617	9/1958	Johnson	322/20 X
3,119,934	1/1964	Lee	322/20 X

3,167,702	1/1965	Schonung et al.	322/19 X	3,801,884	4/1974	Sequin	307/221 D X
3,474,323	10/1969	Kilgore et al.	322/25 X	3,851,154	11/1974	Beecham	307/221 R X



1. A dynamic stabilizer for compensating for the effect on output electrical power of torsional oscillation in a resilient shaft between masses of an electrical power generating system which is capable of generating electrical power at a nominal frequency, comprising:

a. torsional oscillation sensing means for sensing said torsional oscillation, said torsional oscillation sensing means having an output, said torsional oscillation sensing means providing a torsional oscillation output signal at said latter output which latter signal is related to said torsional oscillation;

b. transfer means for operating on said torsional oscillation output signal, said transfer means having an input and an output, said transfer means input being connected to said torsional oscillation sensing means output to receive said torsional oscillation output signal, said transfer means operating on said torsional oscillation output signal in such a manner as to provide a resulting transfer means output, signal at said transfer means output which is characterized as being related to said nominal frequency of said electrical power and said torsional oscillation; and

c. compensating means for directly compensating for the effect of said torsional oscillation on said generating system output electrical power, said compensating means having a first input which is connected to an electrical power output terminal of said power generating system where said output electrical power is available, said compensating means having a second input which is connected to said output of said transfer means, said compensating means having an output which is connectable with a load, said compensating means receiving said output electrical power from said generating system at said first input which power is affected by said torsional oscillation, said compensating means receiving said transfer means output signal, said later signal being utilized by said compensating means to operate directly on said output electrical power to thereby make available to said load electrical power which is generally unaffected by said torsional oscillation even though said torsional oscillation is present in said shaft.

B 468,100

CHARGE COUPLED PARALLEL-TO-SERIAL CONVERTER FOR SCENE SCANNING AND DISPLAY

Dennis Joseph Woywood, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 8, 1974, Ser. No. 468,100

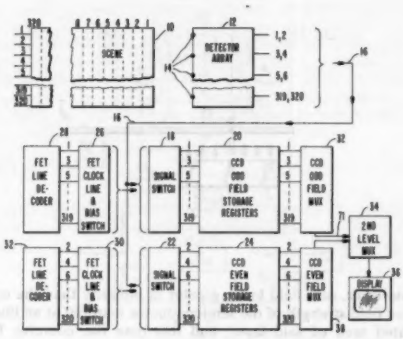
Int. Cl.² H04N *3/14*

U.S. Cl. 178—7.1 **4 Claims**

References Cited

UNITED STATES PATENTS

3,609,392	9/1971	Tetik	307/221 C
3,696,250	10/1972	Weimer	178/7.1 X
3,800,080	3/1974	Fuwa	178/7.1
3,801,884	4/1974	Sequin	307/221 D X
3,851,154	11/1974	Beecham	307/221 R X



1. In combination,

first and second storage arrays each including a plurality of charge coupled device (CCD) shift registers,

switch means operating to apply a corresponding plurality of line scan signals in parallel to said plurality of registers in said first storage array to fill the first array, and then to apply a corresponding plurality of subsequent line scan signals in parallel to said plurality of registers in said second storage array to fill the second array, and

multiplexer means operating while said first storage array is being filled to couple signals serially from register-after-register in the second storage array to a signal output line, and operative while the second storage array is being filled to couple signals serially from register-after-register in the first storage array to the signal output line.

B 472,276

METHOD OF STORING MAGNETICALLY CODED DATA IN A MAGNETO-OPTICAL SEMICONDUCTOR LAYER

Willibald-Karl Unger, Munich, Germany, and Walter Lugscheider, Linz-Dornach, Austria, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed May 22, 1974, Ser. No. 472,276

Claims priority, application Germany, May 23, 1973, 2326315

Int. Cl.² G11C *11/14, 13/06*

U.S. Cl. 340—174 TF **4 Claims**

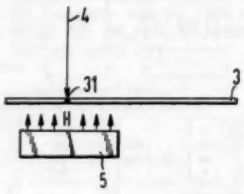
References Cited

UNITED STATES PATENTS

3,625,583	12/1971	Fan et al.	340/174 YC
3,680,065	7/1972	Almasi et al.	340/174 YC

1. A method of magnetically recording information in a magneto-optical semiconductor layer, in which for each bit an individual area of said layer is illuminated with light and simultaneously magnetized or demagnetized, comprising the steps of exposing selected ones of said areas with light which has a frequency spectrum containing large amounts of energy at frequencies corresponding to the energies at which the charge carriers transfer between the valence band, the conduction band, and the impurity bands, the light being of sufficiently

low intensity that only an insignificant temperature rise occurs during exposure, with the temperature of said layer remaining below its Curie temperature, and applying a magnetic field to



said layer, said field being greater in intensity than the coercive field strength of the semiconductor material at an illuminated area of said layer, and less than the coercive field strength of the unilluminated material.

B 476,967

APPARATUS FOR TRANSFERRING ARTICLES THROUGH VARIOUS PROCESSING SECTORS OF A MANUFACTURING SYSTEM

Jesse Aronstein; Arkady Leoff, both of Poughkeepsie; John J. Murphy, Fishkill, and Winfield S. Ruder, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 319,563, Dec. 29, 1972. This application June 6, 1974, Ser. No. 476,967

Int. Cl.² G05B *11/18*

U.S. Cl. 318—593 **6 Claims**

References Cited

UNITED STATES PATENTS

2,798,992	7/1957	Adler et al.	318/593
3,209,221	9/1965	Pugsley et al.	318/593 X
3,222,637	12/1965	Gray	318/593 X
3,339,122	8/1967	Sangster	318/594 X
3,504,245	3/1970	Cotton et al.	318/594 X
3,689,820	9/1972	Takegawa	318/594
3,719,879	3/1973	Marcy	318/593
3,760,249	9/1973	Connors	318/653 X
3,775,837	12/1973	Tomita et al.	318/593 X

1. Apparatus for positioning a moveable member comprising:

A. track means for controlling the path of said moveable member along a predetermined path;

B. means on said member for reversibly driving thereof along said path through and to any one of a plurality of locations thereon;

C. means on said member for continuously generating a first analog signal representing the location of said memver along any point of said path including any point between and at said locations;

D. means for generating a second analog signal corresponding to a specified new location for said member along said path;

E. means for continuously generating a difference signal, from said first and second signals representative of the distance and direction of said member from and to, respectively, said new location with said drive means responsive thereto for moving said member to said new location;

F. means to stop said member at said desired location;

G. wherein said second signal generating means comprises an address circuit means for generating a digitally coded electrical signal specifying a said desired new location for said member, and converting said digitally coded signal to a representative said second analog signal;

H. wherein said first signal generating means comprises a motion sensing means coupled to said drive means for continuously producing said first analog signal representing the position of said member along any point of said path;

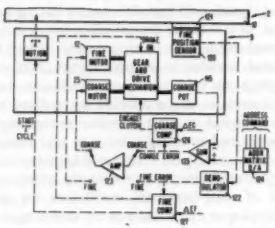
I. wherein said summing means comprises a summing amplifier for generating said difference signal;

j. means for generating a tolerance signal representing permissible deviation of said member from coincidence with a said desired location;

K. means for comparing said difference signal with said tolerance signal and generating a coincidence signal therebetween;

L. means responsive to said coincidence signal to activate said stopping means;

m. wherein said activating means comprises means for generating a fine tolerance signal representing a smaller permissible deviation of said member from coincidence with said specified location;



n. position representing stop means comprising a magnet at each said desired location along said path;

O. means on said member for sensing said magnet and generate a fine difference signal therebetween;

P. means for comparing said fine difference signal with said fine signal and on coincidence therebetween generating a stop signal for said drive means;

Q. wherein said drive means comprises a coarse motor means responsive to the first said difference signal of said summing amplifier and a fine motor means responsive to said fine difference signal;

R. a drive mechanism for said reversible driving of said member; and

S. a clutch means for interchangeable engaging said drive mechanism between said coarse and fine motor means in response, respectively, to the absence and presence of said coincidence signal; wherein

T. said stop means comprises brake means for stopping said member in response to said stop signal;

U. wherein said drive mechanism includes a pinion meshed with a rack on said track means;

V. wherein said moveable member includes a carrier head for supporting articles during movement of said member; and

W. transfer means for depositing and removing articles on said carrier head, from and to, respectively, specified ones of said locations, adjacent said path, when said member is directed thereto.

B 480,749

FIELD EFFECT TRANSISTOR WITH A CARRIER INJECTING REGION

Michio Arai, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed June 19, 1974, Ser. No. 480,749

Claims priority, application Japan, Jan. 21, 1973, 48-70120; June 21, 1973, 48-70121

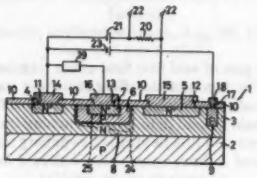
Int. Cl.² H01L *29/80*

U.S. Cl. 357—22 3 Claims

References Cited

UNITED STATES PATENTS

3,453,504	7/1969	Compton et al.	357/22
3,538,399	11/1970	Bresee et al.	357/22
3,595,715	7/1971	Thire et al.	357/22
3,597,287	8/1971	Koepp	357/22
3,619,737	11/1971	Chiu	357/22
3,649,385	3/1972	Kobayashi	357/22
3,656,031	4/1972	Bresee et al.	357/22
3,663,873	5/1972	Yagi	357/22
3,755,012	8/1973	George et al.	357/22



1. A planar semiconductor device comprising a semiconductor substrate of a first conductivity type, an epitaxial layer of opposite conductivity type overlying said substrate, a source region of opposite conductivity type and of an impurity concentration greater than said epitaxial layer formed in the surface of said epitaxial layer, a drain region of opposite conductivity type and of an impurity concentration greater than said epitaxial layer formed in the surface of said epitaxial layer and laterally offset from said source region, a first gate region of first conductivity type formed in said epitaxial layer between said source and drain regions, a second gate region of opposite conductivity type and of an impurity concentration greater than said epitaxial layer formed in said first gate region, a gate control circuit connected between said source region and said second gate region, a first potential source, a load resistor connected to said first potential source and the combination connected between said source and drain regions, output terminals connected to opposite ends of said load resistor, an emitter region of a first conductivity type formed in said epitaxial layer, and a second potential source connected to said emitter region.

B 483,268

TEST TECHNIQUE FOR SEMICONDUCTOR MEMORY ARRAY

William M. Chu, and George Sonoda, both of Poughkeepsie, N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed June 26, 1974, Ser. No. 483,268

Int. Cl.² G01R *31/00, 31/26*

U.S. Cl. 324—158 R 6 Claims

References Cited

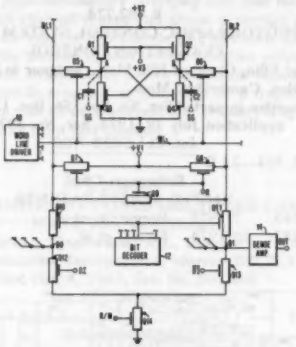
UNITED STATES PATENTS

3,795,859	5/1974	Benante et al.	324/158 T

1. A method of testing a semiconductor storage array including bistable storage cells, each storage cell coupled to first and second bit lines, comprising the steps of:

applying a first logic level signal to said first bit line while applying a second logic level signal to said second bit line thereby writing a signal having a first binary value into a selected storage cell;

applying a second logic level signal to said second bit line while applying a first logic level signal to said first bit line thereby writing a signal having a second binary value into



said selected storage cell, said last mentioned writing step having a much longer time duration than normally required for writing a signal into said storage cell; and

determining whether said cell contains said first or second binary value.

B 491,650

INSTALLATION FOR PRODUCING RADIOLOGICAL ANGIOGRAPHIC EXPOSURES

Stig Henrik Grim, Osterskar, Sweden, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed July 25, 1974, Ser. No. 491,650

Claims priority, application Germany, Aug. 30, 1973, 2343796

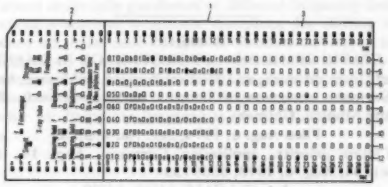
Int. Cl.² A61N *5/01*

U.S. Cl. 235—151 9 Claims

References Cited

UNITED STATES PATENTS

2,488,324	11/1949	Pegard	340/225
2,715,703	8/1955	Schuck	318/569 X
3,345,613	10/1967	Bucholtz et al.	340/172.5
3,569,813	3/1971	Clark et al.	318/569
3,725,652	4/1973	Konvalina	318/568
3,783,251	1/1974	Pavkovich	235/151



1. In an installation for producing radiological angiographic exposures, a generally longitudinally displaceable patient support; an exposure apparatus; setting means for adjusting said exposure apparatus preceding commencement of a series of exposures; and program control means including a plurality of program cards for control of said installation during a series exposure sequence in dependence upon a particular desired dynamic exposure program, the improvement comprising; each said program card including a portion for recording a static exposure program in addition to effecting control over

said installation during the dynamic exposure program so as to determine the setting of said installation preceding said exposures, said program control means including means for reading said static exposure program and for corresponding setting of said installation.

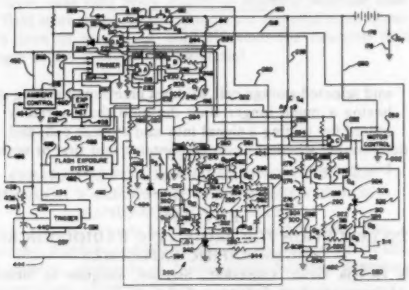
B 492,774
PHOTOGRAPHIC CONTROL SYSTEM WITH EVALUATION CONTROL

Seymour Ellin, Chestnut Hill, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 424,556, Dec. 13, 1973. This application July 29, 1974, Ser. No. 492,774
Int. Cl.² G03B *7/00*
U.S. Cl. 354—23 D **38 Claims**

References Cited
UNITED STATES PATENTS

3,744,385	7/1973	Burgarella et al.	354/23 D
3,842,587	10/1974	Strauss et al.	354/23 D



1. In an exposure control system actuable to automatically carry out a photographic exposure cycle effecting the exposure of photographic material in accordance with the brightness level of a scene, the improvement comprising:

detector means responsive to said scene brightness and having a signal condition in the presence of levels of brightness below a predetermined level;

selectively engageable inhibit means responsive to said signal condition for preventing the carrying out of a said exposure cycle when enabled upon actuation of said system; and

override means for suppressing said inhibit means enablement for a predetermined interval of time following an initial said actuation of said system.

B 495,185
STATIC SEMICONDUCTOR STORAGE ELEMENT

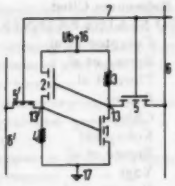
Karl Goser, Munich, and Michael Pomper, Schliersee, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Aug. 6, 1974, Ser. No. 495,185
Claims priority, application Germany, Aug. 14, 1973, 2341104; Aug. 6, 1973, 2339735
Int. Cl.² G11C *11/40, 13/00*
U.S. Cl. 340—173 FF **13 Claims**

References Cited
UNITED STATES PATENTS

2,907,895	10/1959	Van Overbeek	307/288

1. A static storage element comprising a storage flip-flop with first and second interconnected branches, said first branch comprising a first field effect switching transistor and a first two-pole load element connected in series, said second branch comprising a second field effect switching transistor and a second two-pole load element connected in series, a supply voltage source connected to both of said branches, said first and second field effect transistors being formed with complementary conductivity, the sequence of connection of field effect switching transistor and load element of said second branch, relative to said voltage source, being the opposite of the sequence of connection of the field effect transistor and load element in said first branch, first connecting means for



connecting the gate of said first field effect transistor with the node between the second field effect switching transistor and its associated load, and second connecting means for connecting the gate of said second field effect switching transistor with the node between said first field effect switching transistor and its associated load without intersecting with said first connecting means.

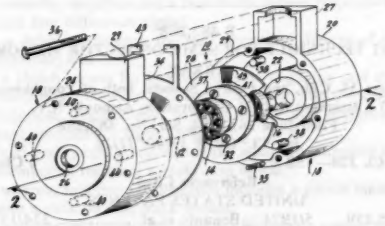
B 503,618
ROTARY PULSE TRANSDUCER HAVING STATOR SEALING MEANS

David L. Willits, Wadsworth, Ill., assignor to Dynapar Corporation, Gurnee, Ill.

Filed Sept. 6, 1974, Ser. No. 503,618
Int. Cl.² G01D *5/34*
U.S. Cl. 250—231 SE **15 Claims**

References Cited
UNITED STATES PATENTS

3,421,012	1/1969	Johnson, Jr.	250/233
3,693,023	9/1972	Wasserman	250/231 SE



1. An improved rotary pulse transducer comprisng:

a shaft;

a photoelectric rotor mounted on said shaft;

a housing having bearing means rotatably supporting said shaft, said housing being comprised of portions having opposing joinder surfaces;

an annular photoelectric stator located in alignment with said photoelectric rotor, said stator being sealingly interposed between the abutting contiguous joinder surfaces of said housing halves; and

photoelectric sensing means operatively associated with said photoelectric rotor and stator for ascertaining relative rotation of said rotor with respect to said stator.

B 504,503

FET HAVING A LINEAR IMPEDANCE CHARACTERISTIC OVER A WIDE RANGE OF FREQUENCY

Takaaki Yamada, Atsugi, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 391,464, Aug. 24, 1973, abandoned, which is a continuation-in-part of Ser. No. 358,168, May 7, 1973, abandoned. This application Sept. 9, 1974, Ser. No. 504,503

Claims priority, application Japan, Aug. 28, 1972, 47-85950

Int. Cl.² H01L *29/78*

U.S. Cl. 357—23 **5 Claims**

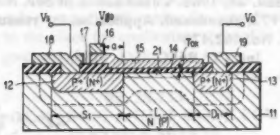
References Cited

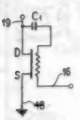
UNITED STATES PATENTS

3,436,622	4/1969	Warner	357/23
3,676,921	7/1972	Kool	357/23
3,714,522	1/1973	Komiya et al.	357/23

OTHER PUBLICATIONS

C. Hu et al., "A Resistive-Gated IGFET Tetrode," IEEE Trans. on Electron Dev., Vol. ED-18, No. 7 July 1971, pp. 418–425.





1. A field effect transistor comprising: a semiconductor substrate of one impurity type, two spaced regions of opposite conductivity type in respect to said substrate in one face thereof providing laterally separated source and drain regions and defining a channel region therebetween having ends adjacent said two spaced regions, a first insulating layer overlying said one face, a second one-piece resistive polycrystalline layer having a resistivity in the range from 10,000 ohms/-square to 30 giga-ohms/square overlying said first insulating layer over said channel region and above a portion of said source and drain regions, and a single gate electrode in ohmic contact with the portion of said second resistive polycrystalline layer which overlies said source and drain regions, and said gate electrode mounted so that none of it overlies said channel region and its edge nearest said channel is spaced a distance laterally from said channel.

B 504,899

SPEECH COMPONENT CODED MULTIPLEX CARRIER WAVE TRANSMISSION

Robert C. Mathes, Maplewood, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 4, 1943, Ser. No. 504,899

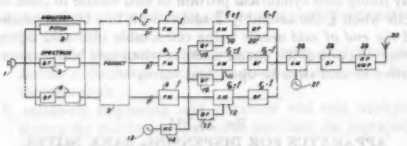
Int. Cl.² H04K *1/04*

U.S. Cl. 179—1.5 FS **1 Claim**

References Cited

UNITED STATES PATENTS

1,447,204	3/1923	Espenschied	343/200
1,565,521	12/1925	Stone et al.	179/1.5 R
1,629,685	5/1927	Ditcham	325/182
1,819,508	8/1931	Hansell	325/35
2,103,847	12/1937	Hansell	332/17
2,233,183	2/1941	Roder	332/22
2,270,385	1/1942	Skillman	179/15



1. In a secret telephone transmission system in which speech waves are analyzed into component speech-defining low frequency signals which are coded in stepped wave form, a group of frequency modulators of the same type and same average frequency, means to impress said signals of stepped wave form on the respective frequency modulators to produce a plurality of frequency modulated waves of the same average frequency, and means to translate said last waves into frequency modulated waves accurately positioned at different frequency levels comprising a separate amplitude modulator for shifting the frequency of each such frequency modulated wave, and means to supply to said amplitude modulators carrier waves of accurately spaced frequency comprising a source of base frequency waves of highly constant frequency and a harmonic generator for fixing the frequencies of said supplied carrier waves.

REISSUES

MARCH 9, 1976

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

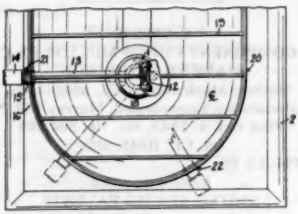
Re. 28,730
STOVE AND BURNER ASSEMBLY

Harald Finnstrand, Branford, Conn., assignor to International Telephone & Telegraph Corporation, New York, N.Y.

Original No. 3,807,381, dated Apr. 30, 1974, Ser. No. 359,950, Apr. 13, 1973. Application for reissue Feb. 3, 1975, Ser. No. 546,313

Int. Cl.² F24C *5/02*

U.S. Cl. 126—43 **10 Claims**



1. A burner assembly for liquid fuels comprising a stem member having an axial fuel passage therein, a body member engaging said stem member and axially movable thereon upon relative rotation therebetween, a valve defined between said stem [passage] *member* and said body member, said body member including a nozzle having a cylindrical portion and a lower tapered portion, a needle extending into *and substantially filling* said cylindrical portion of said nozzle *to close said nozzle* when [the assembly] *said valve* is in a closed position and *the end of said needle* being retractable into said tapered portion to control the nozzle opening when said body is moved relative to said stem to open said valve.

Re. 28,731
APPARATUS FOR DISPENSING BANK NOTES

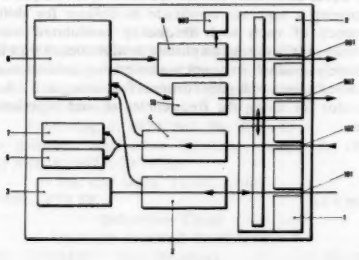
Gerard Burgin, 6, rue de la Thur, Kingersheim, France

Original No. 3,877,559, dated Apr. 15, 1975, Ser. No. 328,936, Feb. 2, 1973. Application for reissue Aug. 25, 1975, Ser. No. 607,434

Claims priority, application Switzerland, Feb. 4, 1972, 1636/72

Int. Cl.² G07F *11/00*

U.S. Cl. 194—4 G **10 Claims**



1. Apparatus for dispensing bank notes on presentation of a bank identity card and a cheque on which the amount corresponds to the value of the notes requested, said apparatus comprising:

a bank note dispenser,

means for verifying the authenticity of the bank identity card introduced into the apparatus by the user,

means for verifying the authenticity of a cheque introduced into the apparatus by the user,

means for verifying agreement between the identification marks on the bank identity card and the identification marks on the cheque,

a logic control means receiving the signals supplied respectively by the means for verifying the authenticity of the identity card, the means for verifying the authenticity of the cheque and the means for verifying agreement, said logic control means controlling the note dispenser in accordance with the information it has received,

in which the means for verifying the authenticity of the bank identity card and the means for verifying the authenticity of the bank cheque respectively include a positioning device for positioning the identity card and the cheque in vertical position, edgewise, for examination,

and in which the means for verifying the card and the means for verifying the cheque comprise a common means for reading comprising reading heads integral with a horizontal rotary shaft whereby the reading heads may be presented alternatively to the card and the cheque in order to verify the cheque and the card separately.

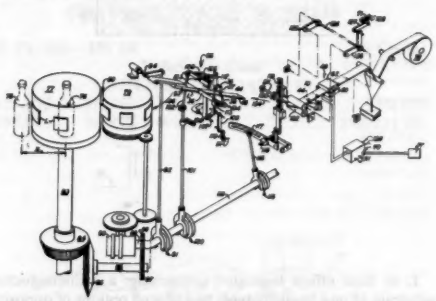
Re. 28,732
METHOD OF AND APPARATUS FOR PRINTING AND FEEDING LABELS IN A CONTINUOUS WEB, AND FOR VERIFYING AND CUTTING INDIVIDUAL LABELS THEREFROM FOR APPLICATION TO ARTICLES

George W. von Hofe, Millington, N.J., assignor to NJM, Inc., Hoboken, N.J.

Original No. 3,536,550, dated Oct. 27, 1970, Ser. No. 523,756, Jan. 28, 1966. Continuation of Ser. No. 300,209, Oct. 24, 1972, abandoned. Application for reissue Apr. 19, 1974, Ser. No. 462,478

Int. Cl.² B65C *3/16, 9/44, 9/46*

U.S. Cl. 156—64 **37 Claims**



2. The method of labeling containers for a given product, which comprises feeding toward the place for application of the labels to such containers, a continuous length of label web having provided thereon given repeat lengths of labels with certain of the adjacent labels on said label web being in abutting relation and others of the adjacent labels on said label web being spaced by equal increments, and said label web having provided thereon a first control element associated with each of said labels and a second control element associated with each of said increments, successively scanning said first and second control elements in the order in which they appear on the label web in the feed of the web toward said

place of label application and generating a control signal for each control element detected by said scanning means, using the control signals created by detecting said first control elements to successively register the trailing ends of the terminal labels on the web with a first label cutting means by control of said web feeding operation, and using the control signals created by detecting said second control elements to render operable a second label cutting means positioned relative to said first cutting means to cut the trailing end of any increment connected to the trailing end of a terminal label registered with said first cutting means, and transferring the severed labels to the place for application thereof to the containers for the given product.

7. In a label machine, feed means for feeding through the machine a continuous length of label web having provided thereon given repeat lengths of labels with certain of the adjacent labels on said web being in abutting relation and others of the adjacent labels on said web being spaced by equal increments, and said label web having provided thereon a first control element associated with each of said labels and a second control element associated with each of said increments, scanning means constructed and arranged to scan the web for said first and second control elements and including means automatically operative to generate a control signal for each control element detected by said scanning means, a first label cutting means for applying severing cuts to the web, a second cutting means for applying a severing cut to the web a distance spaced in back of the line of cut of said first label cutting means equal to the width of one of said increments, means controlled by the control signals created by detecting said first control elements to cause said feeding means to successively register the trailing ends of the terminal labels on the web with the line of cut of said first label cutting means, means controlled by the control signals created by detecting said second control elements to render said second cutting means operable to cut the trailing end of any increment connected to the trailing end of a terminal label registered with said first cutting means, and means for transferring the severed labels to the place for application thereof to the containers for the given product.

Re. 28,733

METHOD OF MAKING A CAST GUIDE FOR FOLDING FLEXIBLE SHEETS

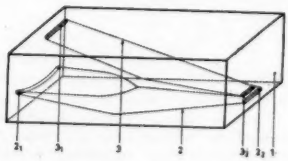
Elie Cohen, 1, Rue Marcel Cavignac, Perigueux (Dordogne), France

Original No. 3,822,335, dated July 2, 1974, Ser. No. 298,585, Oct. 18, 1972. Application for reissue Jan. 6, 1975, Ser. No. 539,001

Claims priority, application France, Oct. 29, 1971, 71.39056

Int. Cl.² B29C *1/08*

U.S. Cl. 264—219 **7 Claims**



1. A method of making a guide for forming a length-wise folded flexible web comprising:

providing a flat sheet of malleable material, leaving flat one end of said sheet, folding generally length-wise said malleable material adjacent the other end thereof so that said material adjacent said other end has folds corresponding to desired folds of said folded flexible web while also folding said malleable material intermediate the two ends so as to form a gradual transition between said flat one end and folds of said material adjacent said other end; placing the malleable sheet material in a mold with the ends of the malleable sheet material extending through the ends of the mold; casting and hardening a resin inside the mold and about both sides of the malleable sheet material; and eliminating the malleable sheet material.

Re. 28,734

EDM POWER SUPPLY FOR GENERATING SELF-ADAPTIVE DISCHARGE PULSES

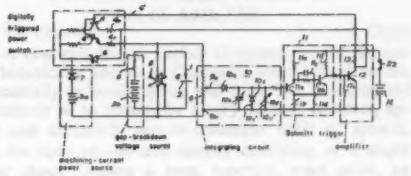
Kiyoshi Inoue, 16-8, 3-chome, Kamiyoga, Setagayaku, Tokyo, Japan

Original No. 3,604,885, dated Sept. 14, 1971, Ser. No. 838,575, July 2, 1969. Continuation-in-part of Ser. No. 682,824, Nov. 14, 1967, Pat. No. 3,539,755, which is a continuation-in-part of Ser. No. 493,473, Oct. 6, 1965, Pat. No. 3,360,683. Application for reissue May 22, 1973, Ser. No. 362,823

Claims priority, application Japan, July 5, 1968, 43-47406; Sept. 19, 1968, 43-67894; Mar. 8, 1969, 44-17878

Int. Cl.² B23P *1/08*

U.S. Cl. 219—69 P **50 Claims**



1. A method of machining a conductive workpiece comprising the steps of:

a. spacedly juxtaposing an electrode with said workpiece across a discharge gap while passing a dielectric liquid therethrough.

b. relatively displacing said electrode and said workpiece during the machining thereof to maintain the gap spacing generally constant;

c. applying across said electrode and said workpiece a direct current arc-striking voltage sufficient to initiate discharge across said gap while permitting said voltage to build up thereacross to a level constituting a function of conductivity characteristics of said gap and to decay with discharge across said gap;

d. deriving an analog signal representing the voltage build up and decay across said gap; and

e. triggering a machining current flow through said gap across said electrode and said workpiece upon said signal exceeding a first threshold value and upon initiation of a discharge by said voltage, and terminating said machining current flow through said gap upon detection of a value of the analog signal declining to a second threshold value less than said first threshold value.

7. A power supply for electrical discharge machining wherein a tool electrode is spacedly juxtaposed with a workpiece constituting a counterelectrode across a machining gap flooded with a dielectric liquid coolant, said power supply comprising:

a main source of machining current including an electronically triggerable power switch connected in series with said electrodes and said gap;

an auxiliary source of arc-striking voltage connected in a closed-loop arrangement with said gap for building up a voltage thereacross;

sensing means including a voltage-dividing resistor having a pair of output terminals connected across said gap for producing an output indicative of the breakdown conditions of said gap;

means including an integrating network having a capacitor bridged across said output terminals for forming an ana-

log signal from said output related to the gap conditions; threshold gating means including a Schmitt trigger responsive to said analog signal for establishing a first digital state and a second digital state, said threshold gating circuit being connected to said power switch for substantially instantaneously rendering same conductive and terminating conductivity of said power switch upon the occurrence of said digital states respectively, said Schmitt trigger having an input transistor with a base connected to said capacitor.

48. A process for shaping a workpiece using electric current comprising the steps of:

positioning a workpiece adjacent a working electrode such that the electrode and the workpiece are separated by a working gap,

impressing an intermittent pulse voltage across said working gap,

detecting the time period between the instant at which a voltage is impressed across said working gap and the instant at which a substantial current begins to flow within said working gap; and,

controlling the length of time during which said substantial current flows directly in response to the length of said detected time period.

50. An apparatus for shaping a workpiece by electric current comprising:

switching means for impressing a voltage across a working gap between an electrode and a workpiece, said voltage remaining at a no-load level until a substantial current flows in said working gap,

timing means for measuring the time period during which said no-load voltage exists across said working gap; and,

control means coupled to said no-load voltage time measuring means for controlling the duration of flow of said substantial current directly in response to the output from said no-load voltage time measuring means.

PLANT PATENTS

GRANTED MARCH 9, 1976

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,836
ORCHID PLANT (FUGUE)

Maurice Lecoufle and Michel Vacherot, Boissy-St.-Leger, France, assignors to Les Petits-Fils et Fils de Vacherot & Lecoufle, Boissy-St.-Leger, France

Filed Nov. 20, 1974, Ser. No. 525,405
Claims priority, application France, Nov. 29, 1973, 7342577
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive variety of orchid plant of the species Cymbidium substantially as herein shown and described, characterized particularly by its vigorous, rapidly spreading and floriferous growth habit, its rapid production of new bulbs, its abundant production of regularly spaced flowers having relatively long peduncles, its natural period of flowering with full production occurring about mid-December, and the attractive coloration of its flowers.

3,837
ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Dec. 13, 1974, Ser. No. 532,702
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—5 **1 Claim**

1. A new and distinct cultivar of rose plant of the climber class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous climbing habit of growth, dark green, semi-glossy foliage, buds of Chinese Coral (W) changing to French Rose (W) in the open flowers, and continuous blooming habit from spring through autumn.

3,838
ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Dec. 13, 1974, Ser. No. 532,709
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct cultivar of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous, upright growth, Currant Red buds, Crimson open flowers of 50–60 petals, very strong fragrance, and large leathery foliage.

3,839
CYPRESS TREE

Edgar Norman Swane, Ermington, New South Wales, Australia, assignor to Swane Bros. Pty. Ltd., Dural, New South Wales, Australia

Filed Jan. 9, 1975, Ser. No. 539,766
Int. Cl. A01h *7/00*
U.S. Cl. Plt.—50 **1 Claim**

1. A new and distinct variety of cypress tree of the species botanically known as *Cupressus sempervirens stricta*, substantially as herein shown and described, characterized particularly as to novelty by a very slender, compact, upright and uniformly narrow-columnar habit of growth, with the apex of the tree usually consisting of a single leader shoot forming a long, tapering, erect point, an unusual bright golden yellow foliage color and good hardiness.

3,840
ROSE PLANT (CHIBI)

George Y. Umeda and Daniel S. Shinoda, San Leandro, Calif., assignors to San Leandro Nursery Co., San Leandro, Calif.

Filed Feb. 6, 1975, Ser. No. 547,575
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—28 **1 Claim**

1. A new and distinct variety of rose plant, substantially as herein shown and described, characterized by the mandarin red coloring of its small, high centered blossoms which are produced continuously from the spring to the fall and profusely on vigorous, upright, and much branched plants which reach a height of three feet, the cut flowers having long lasting quality.

PLANT PATENTS

CLASSIFICATION

Dec. 22, 1970 PLANT PATENTS 1

PLANT PATENTS

CLASSIFICATION

Dec. 22, 1970 PLANT PATENTS 1

PATENTS

GRANTED MARCH 9, 1976

ERRATA

For CLASS	See PATENT NO.
074–421	3,942,388
215–031	3,942,660
252–522	3,942,761
188–196	3,942,827
296–105	3,942,830
229–015	3,942,837
424–246	3,943,131
264–290 T	3,943,139
252–519	3,943,168
261–142	3,943,221
424–343	3,943,234
428–262	3,943,252
260–483	3,943,257
315–317	3,943,397

PATENTS

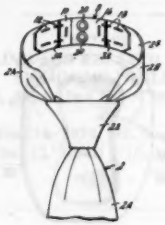
GRANTED MARCH 9, 1976

GENERAL AND MECHANICAL

3,942,191
SNAP-ON NECKTIE AND DEVICE FOR CONVERING ORDINARY FOUR-IN-HAND NECKTIE FOR SNAP-ON USAGE

Cecil C. Hunnicutt, 206 Harrison St., Sabetha, Kans. 66534

Filed Jan. 2, 1975, Ser. No. 537,899
Int. Cl.² A41D *25/04*
U.S. Cl. 2—145 1 Claim



1. A device for converting an ordinary four-in-hand necktie for snap-on usage, when said necktie is transversely severed intermediate its ends, said device comprising:

a. a pair of tabs adapted to be secured respectively to the severed ends of said necktie, each of said tabs comprising an elongated double layer of flexible sheet material, said layers being bonded together at one end portion of said tab to a transverse bond line spaced apart from the opposite end of said tab, the opposite end portions of said layers constituting free flaps adapted to receive the associated severed end portion of said necktie therebetween,

b. a separable fastener including a pair of mating elements secured respectively to said tabs, each fastener element being secured in the bonded portion of its associated tab in spaced apart relation from the bond line of said tab, at least one of said flaps of each tab having a transverse indicia line imprinted thereon at a distance from said bond line equal to the spacing of said fastener element at the opposite side of said bond line, whereby if the cut end portion of said necktie is inserted between said flaps to said bond line, while folded on itself so that its extreme end extends to said indicia line, the length of said necktie will not be changed by insertion of said device, and

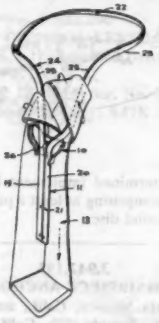
c. means for securing the flap portions of each of said tabs to the necktie end portion disposed therebetween.

3,942,192
NECKTIE

Deane F. Harris, Ferrum, Va., assignor to Byrd Industries of Virginia, Inc., Orange, Va.

Filed Apr. 23, 1975, Ser. No. 570,944
Int. Cl.² A41D *25/08*
U.S. Cl. 2—152 R 22 Claims

1. A necktie comprising a rigid, knot supporting means; a first tie portion having a neck embracing loop including lower, inner edges provided with inverlockable means; means secured to said knot supporting means and operatively connected to said interlockable means for interlocking and unlocking said interlockable means upon relative movement between said interlockable means and said interlocking and unlocking means to vary the size of said loop; and a second tie portion having an upper end thereof secured to said knot supporting means and wrapped around said knot supporting member to form a knot portion, and the remainder thereof



depending from said knot supporting member to form a front, depending panel.

3,942,193
DENTAL GLOVE

Bradley L. Pugh, Dothan, Ala., assignor to Akwell Industries, Inc., Dothan, Ala.

Filed Mar. 27, 1975, Ser. No. 562,430
Int. Cl.² A41D *19/00*
U.S. Cl. 2—167 4 Claims

1. A thin-walled elastic dental glove comprising an elastic glove body having an interior surface and an exterior surface, and a single substantially uniform coating means substantially fully covering both said interior and exterior surfaces of said glove body, said single coating means including a lubricant means and a flavor agent means, said coating means by operation of said lubricant means on said interior surface facilitating insertion of a dentist's hand into said glove body, and said coating means by operation of said flavor agent means on said exterior surface providing a pleasant taste in the mouth of a dental patient.

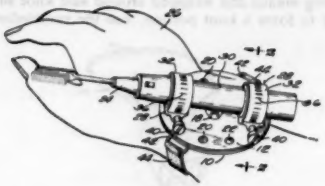
3,942,194
PROSTHETIC DEVICE FOR HANDICAPPED PERSONS

Sybil Betty Anna Winter, 10124 W. Capitol Drive, Milwaukee, Wis. 53222

Filed Aug. 30, 1974, Ser. No. 501,950
Int. Cl.² A61F *1/00, 1/06*
U.S. Cl. 3—1 7 Claims

1. A prosthetic device comprising a first stiff disc, a second stiff disc rotatably attached in face-to-face contact with said first disc, an implement holder attached to said second disc and rotatable therewith, a strap attached to said first disc for strapping the two discs and implement holder to a person's

hand, means for latching said discs together in any one of a predetermined plurality of rotary positions whereby said implement holder can be oriented in the proper rotary position

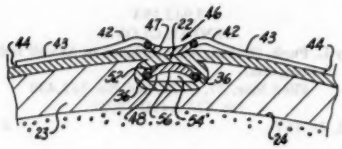


for use of a predetermined implement by said person, said implement holder comprising at least a pair of circular clamps attached to said second disc.

3,942,195
HAIRPIECE ANCHOR

Jack Bauman, Santa Monica, Calif., assignor to Dura-Hair International, Inc., Beverly Hills, Calif.

Filed Feb. 18, 1975, Ser. No. 550,178
Int. Cl.² A61F 1/00
U.S. Cl. 3—1 **4 Claims**



1. A hairpiece anchor comprising:

a. an external portion including an upper pair of wires symmetrically disposed on opposite sides of an upper longitudinal axis and extending from an upper base end through a first flared section and a second more divergingly flared section terminating in a pair of laterally oriented tips substantially at right angles to said upper longitudinal axis;

b. a subdermal portion engageable with a scalp tract having a tunnel with predetermined width and length, said subdermal portion of said anchor including a lower pair of wires symmetrically disposed on opposite sides of a lower longitudinal axis parallel to said upper axis and extending with a downward bow from a lower base end through said predetermined length, said pair of wires continuing further in a recurved linear extension converging to form a rounded tip,

said linear extension having a length and contour such that said linear extension is capable of protruding exteriorly from the tunnel when said anchor is installed in a tract, and of engaging an underlying planar portion of the scalp adjacent the tunnel for a sufficient distance as to enable said anchor to resist a substantial upward force applied to said lower base end and tending to urge said linear extension in a downward direction by lever action with the top wall of the tunnel forming a fulcrum; and,

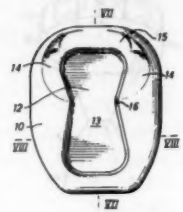
c. an arcuate transition portion comprising a pair of wires joining said upper pair of wires and said lower pair of wires, said transition portion including an upper web spanning said upper base end, a lower web spanning said lower base end, and a transition web spanning said arcuate transition portion, the widths of said lower base end and said transition portion being substantially equal to said predetermined width of the tunnel, with said upper web, said transition web and said lower web being contoured to engage the interposed tract portion overlying the tunnel,

said lower web being arched upwardly in lateral cross section to define a channel for the circulation of air.

3,942,196
DISPOSABLE BEDPAN INSERT

Kenneth Wilson Mills, 11 Redcar Road, Smithills Dean, Bolton, Lancashire, England

Continuation of Ser. No. 400,508, Sept. 25, 1973, abandoned.
This application Feb. 4, 1975, Ser. No. 547,019
Claims priority, application United Kingdom, Oct. 5, 1972, 45863/72
Int. Cl.² A61G 9/00
U.S. Cl. 4—112 **1 Claim**

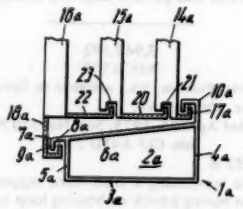


1. A disposable one-piece insert for a bed-pan or commode, comprising a receptacle portion having a small downward taper, a seat portion extending from said receptacle portion and having a front part which is higher than the rear part thereof, an aperture in said seat portion providing an opening into said receptacle portion, said aperture and receptacle portion being elongated from front to rear and waisted between their ends, said seat portion having a downturned peripheral lip and being provided at each side of its receptacle portion towards its rear with a concavity and at the rear of the receptacle portion with a depression which merger smoothly into said rearward side concavities.

3,942,197
SPLASH PARTITION

Jürgen Sudmann, and Holger Wenzel, both of Oldenburg, Germany, assignors to Firma Justin Huppe, Oldenburg, Germany

Filed Mar. 27, 1974, Ser. No. 455,221
Claims priority, application Germany, Dec. 7, 1973, 2360944
Int. Cl.² A47K 3/14
U.S. Cl. 4—149 **5 Claims**



1. A splash partition for a bath or shower comprising: first, second and third sliding doors for movable suspension from a head rail, a foot rail below said sliding doors, said foot rail comprising an inclined top surface descending from a first top outer edge downwardly toward the bath or shower to a second, lower inner edge, an upwardly projecting inverted U-shaped channel formed longitudinally along said first top

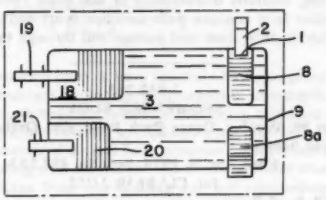
outer edge and overlying and opening downwardly toward said top surface for drainage of water therefrom down onto said top surface, an inverted U-shaped channel formed longitudinally along said second lower inner edge and lying below said surface to allow free water run off into said tub or shower, said first door having a first guide member at the bottom thereof engageable with said upwardly projecting inverted U-shaped channel for guiding movement therealong, said second door having a second guide member at the bottom thereof engageable with said inverted U-shaped channel formed along said second, lower inner edge, and said third door having a third guide member at the bottom thereof for guiding said third door relative to at least one of said first and second doors and said foot rail.

3,942,198

SAFETY BAFFLING AND RELATED EQUIPMENT FOR SWIMMING POOLS

Harold A. Jewett, 5451-42nd St., N.W., Washington, D.C. 20015

Filed Dec. 16, 1974, Ser. No. 533,256
Int. Cl.² E04H *3/16, 3/18*
U.S. Cl. 4—172 **10 Claims**



1. Safety baffling adapted for placement adjacent a wall of swimming pool,

said baffling comprising an upwardly exposed exterior lamina having a skid surface for obliquely intercepting the body of a descending diver happening to make contact with it, and

also comprising a cushioning lamina having a lower bulk density than said exterior lamina, formed of resillient plastic foam, and underlying said exterior lamina,

said baffling having an overall width of at least 2 feet, an overall length of at least 5 feet, and an overall vertical thickness of at least 1½ feet, and in combination with said baffling means for so securing said baffling in said placement that said skid surface slopes frontwardly-downwardly at an angle of at least 10° with the horizontal.

3,942,199

SLIP RESISTANT SURFACES FOR BATHING FIXTURES, SUCH AS BATHTUBS AND SHOWER RECEPTORS

Paul Kollsman, 1010 - 5th Ave., New York, N.Y. 10028

Continuation-in-part of Ser. No. 221,886, Jan. 31, 1972, abandoned. This application Sept. 10, 1973, Ser. No. 395,576
Int. Cl.² A47K *3/12*
U.S. Cl. 4—185 R **9 Claims**

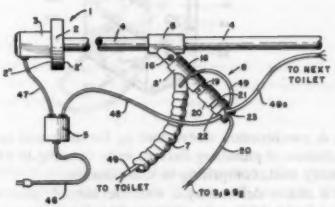
1. A bathing fixture, more particularly a bathtub or shower receptor, or a water sports device, such as a surf board or diving board, comprising on its surface a plurality of elevated elements, said elements being contoured to have a flat top surface and side surfaces meeting the respective top surface along sharp edges, adjacent elements being spaced by relatively depressed, substantially flat-bottomed, portions, the depth of said depressed portions relatively to said top surface being not less than 0.1 and not more than 0.8 mm, the mean width of said depressed portions, taken individually, being not less than 0.75 mm., but in excess of double the respective depth dimension, whereby initially the user's body weight is caused to act on said sharp edges, whereafter, due to skin flexing, a portion of the weight is transferred to the bottom of said depressed portions.

3,942,200

ODOR CONTROL VENTILATOR

Raymond H. Pearson, 627 Sherwood Drive, Richardson, Tex. 75080

Filed Jan. 13, 1975, Ser. No. 540,538
Int. Cl.² E03D *9/04;* **A47K** *13/00*
U.S. Cl. 4—213 **11 Claims**

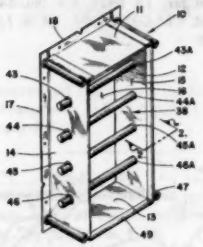


1. A toilet deodorizing accessary for use in combination with one or more toilets, said toilets each including a conventional water tank, water tank cover, and toilet bowl, said water tank having a water discharge conduit through the bottom of the tank, a flushing means including a flush valve controlling the flow of water from the tank into said conduit, and an overflow pipe connected into said discharge conduit below the flush valve, said toilet bowl having a water distribution channel in communication with said discharge conduit for distributing water from said water tank into said bowl when said flush valve is operated to flush said bowl, said accessary comprising an air duct for each toilet suitably connected into the air space within the water tank, a seal means between said water tank and said cover, an electrically driven blower means having a suction side and a discharge side, at least one electrically operated air valve means for each toilet, said air valve means having a first part interconnecting the air duct and suction side of said blower, being capable of selectively opening or closing said interconnection, said first part operable to reduce the air pressure within the air duct and water tank, said air valve means also having a second part operable to vent the water tank to the atmosphere, being capable of selectively opening or closing said vent, an electrical control means for each toilet operable to apply electrical power to the air blower, open the first part of said air valve means, and close the second part of said air valve means, thus causing the air pressure within the water tank to be reduced below atmospheric pressure, whereby odor taken air may be drawn by said blower in seriatim from said toilet bowl, through said water distribution channel, said water discharge conduit, said overflow pipe, said air duct, the first part of said air valve means, and through said blower, said electrical control means also operable so as to remove power from said air blower, close the first part of said air valve means, and open the second part of said air valve means, thus allowing the air pressure within the water tank to return to atmospheric pressure, whereby the toilet is restored to conventional operation.

3,942,201
WALL SLEEVE AND PLUMBING INSTALLATION JIG

Earl L. Morris, and Theodore J. Sally, both of Whittier, Calif., assignors to Acorn Engineering Co., City of Industry, Calif.

Continuation of Ser. No. 331,016, Feb. 9, 1973, abandoned.
This application Sept. 9, 1974, Ser. No. 504,423
Int. Cl.² E03D 11/00
U.S. Cl. 4—252 R 4 Claims



1. A combination sleeve and jig for the rapid and accurate installation of plumbing fixtures in an opening in a concrete or masonry wall, comprising in combination:

a. a sleeve defined by a wall thereabout, said wall of said sleeve bridging the distance betweeen the pair of oppositely-disposed faces of said wall and defining a single, rectangularly-shaped passageway therethrough, said sleeve having front and rear portions and a plurality of paired, oppositely-disposed apertures in the longitudinal, oppositely-disposed portions of said wall of said sleeve and further having a first flange disposed about the rim of said front portion of said sleeve and wherein said first flange is turned inwardly towards the geometric center of said sleeve and forms an angle with said wall of said sleeve from which said first flange is generated which is less than ninety degrees;

b. a plurality of rods each of which is transversely disposed across said sleeve passageway and within said pair of oppositely-disposed apertures in said sleeve wall and projecting therebeyond and further being fixedly secured to said sleeve wall disposed about said apertures;

c. a second flange, said second flange rimming said rear portion and extending outwardly in a substantially radial fashion therefrom and having at least four openings therethrough, said openings being adjacently disposed to the corners of said rectangularly-shaped sleeve passageway; and

d. at least four tubular members, one open end of each of said members being fixedly secured about one of said openings in said second flange of said sleeve, each of said members being also fixedly secured to said sleeve and disposed in parallel relationship to the longitudinal axis of each of said four corners of said rectangularly-shaped passageway of said sleeve.

3,942,202
FLUID DISTRIBUTOR USABLE AS AIR-SUPPORT MATTRESS

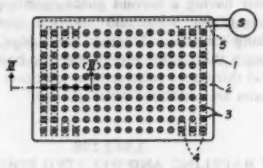
Gerard Chevrolet, Damphreux, Berne, Switzerland, assignor to Roxer SA, Saignelegier, Switzerland

Filed Nov. 27, 1974, Ser. No. 527,811
Claims priority, application Switzerland, Dec. 19, 1973, 17835/73
Int. Cl.² A47C 27/08
U.S. Cl. 5—348 R 3 Claims

1. A fluid distributor comprising a solid elastomeric plate having a pair of opposite parallel faces flanking a neutral plane and formed with:

a pressurizable passage situated between one of said faces and said neutral plane and adapted to be connected to a source of fluid;

an array of vents each extending from said passage across said plane and terminating at respective mouths at the other of said faces; and

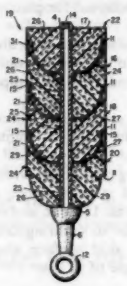


a pair of lips in each of said vents, each of said lips being of generally part-cylindrical shape and normally bearing against the other of the lips of the respective pair tangentially between said neutral plane and said passage so as to normally prevent fluid flow from said passage out of said vent, whereby deformation of said plate rendering said other face concave pulls said lips apart and allows said fluid to flow from said passage out through said vents.

3,942,203
SEGMENTED BUOY

Robert W. Perkins, Ocean Park Road, Old Orchard Beach, Maine 04064

Filed Apr. 3, 1974, Ser. No. 457,553
Int. Cl.² B63B 21/52
U.S. Cl. 9—8 R 3 Claims



1. In a marker buoy of the type having an elongated central rod with a plurality of individual annular flotation members of predetermined diameter sleeved thereon, the combination of:

a plurality of said members, each having a substantially hemispherical lower portion of reduced diameter extending axially at the bottom of each said member and a correspondingly shaped upper cavity in the top of each said member, the lower portion of one member fitting within the upper cavity of the next successive lower member;

said members thereby nesting one on top of the other and mutually defining a cylindrical body;

said reduced diameter lower portion being separated from the main body of said members by a shoulder against which the peripheral rim of the next successive member is seated;

and a weighted nose piece at the lower end of said central rod, resting against the bottom said member for causing said buoy to stand erectly in the water;

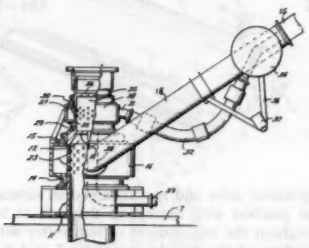
said elongated central rod being hollow with a hollow upper end containing a plug and the weighted nose piece at the lower end thereof having an eye for receiving a line.

3,942,204

SWIVEL ARRANGEMENT FOR SINGLE ANCHOR LEG MOORING BUOY

Robert H. Gruy, Houston, Tex., assignor to Sofec, Inc., Houston, Tex.

Filed Jan. 13, 1975, Ser. No. 540,551
Int. Cl.² B65B 3/04
U.S. Cl. 9—8 P 5 Claims



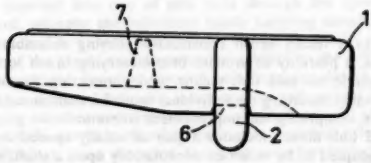
1. In a mooring buoy, a base structure having a plurality of transfer chambers including first conduits communicating, respectively, therewith, means for anchoring said base structure to a marine bottom, spaced-apart chambered housings separately mounted on said base structure each abreast of and communicating with a different one of said transfer chambers so that leakage from one housing can not contaminate any other housing, sealed swivel joints rotatably mounting each of said housings on said base structure, and other conduits connected, respectively, with each of said housings, said base structure including integral wall means segregating said transfer chambers, and said swivel joints for each of said housings being spaced from the other housings and the sealed swivel joints therefor so as to preclude any cross leakage between said housings in case of leakage in any of said sealed swivel joints.

3,942,205

SWIMMING PLATE WITH HANDLE

Roland Lind, Atvidaberg, Sweden, assignor to Gnosjoplast AB, Gnosjo, Sweden

Filed May 12, 1975, Ser. No. 576,823
Int. Cl.² A63B 31/02
U.S. Cl. 9—307 1 Claim



1. Swimming plate with a handle of a type as used as a pedagogical means at swimming instruction and as a training means at training of back-stroke and life-saving, where a handle is placed under the swimming plate and where the underside of the plate, as seen from the side, is made slightly V-shaped, the front edge being thicker than the rear edge and the attachment of the handle being spaced relative to the front edge, characterized in that the plate is designed as a stressed skin construction of polyethylene plastic or the like, where the plate forms a unit and the handle a detachable second unit, the handle being designed as a strong hollow clamp, whose outer legs are designed with a groove, which engages a corresponding semi-circular shoulder in a recess in the plate, the handle moreover being provided with a shoulder, which fits in a recess on the underside of the plate and increases the stability of the construction.

3,942,206

METHOD OF MAKING SHOES

Frederick J. Diamant, 40 E. 83rd St., New York, N.Y. 10028

Filed Feb. 24, 1975, Ser. No. 552,394
Int. Cl.² A43D 9/00
U.S. Cl. 12—142 R 12 Claims

1. A method of making a shoe comprising the steps of providing an upper with a heel flange and counter lining, stitching a longitudinal edge portion of a mud guard to the upper adjacent the lower edge of the upper, attaching only a portion of the periphery of a sock lining to the upper adjacent the lower edge of the upper while leaving the heel portion of the sock lining free from attachment to the upper and counter lining, lasting an inner sole containg a metal shank to said sock lining, bonding the free edge portion of said mud guard to said inner sole in overlying relation thereto, lasting the heel flange to said inner sole in overlying relation thereto, and thereafter attaching an outsole to said inner sole.

3,942,207

VEHICLE WASHING APPARATUS

Gebhard Weigele, Am Schonblick 1a, 8901 Tafertingen, and Johann Sulzberger, Radegundis 11, 89 Augsburg 28, both of Germany

Filed Oct. 3, 1974, Ser. No. 511,539
Claims priority, application Germany, Oct. 4, 1973, 2349861
Int. Cl.² B60S 3/06
U.S. Cl. 15—53 AB 7 Claims

1. An apparatus for washing front, side and rear surfaces of vehicles wherein a relative movement occurs between said apparatus and said vehicle, comprising:

a frame;

at least two brushes rotatably mounted on said frame about generally vertical axes of rotation which lie in planes parallel to the longitudinal axis of said vehicle and are initially inclined at an acute angle (α) with respect to the vertical in the direction of the relative movement of said vehicle relative to said frame whereby the bottom of said brushes are initially inclined toward the front of said vehicle prior to engagement of said front of said vehicle with said brushes;

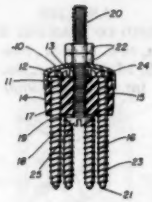
pivot means for pivotally supporting each of said two brushes for pivotal movement about horizontal axes transverse to said longitudinal axis of said vehicle; and

track means on said frame for supporting said brushes for movement between positions adjacent said longitudinal axis of said vehicle for washing said front and rear surfaces of said vehicle along a path extending transversely of said longitudinal axis of said vehicle and remote from said longitudinal axis of said vehicle for washing said side surfaces of said vehicle.

3,942,208
ROTARY CLEANING DEVICE

Archie F. Southard, Jr., Bristow, Okla., assignor to Frank D. Chapman, Bristow, Okla., a part interest

Filed Sept. 26, 1974, Ser. No. 509,655
Int. Cl.² B23D 79/04; F23J 1/00
U.S. Cl. 15—104.01 R 1 Claim



1. A rotary cleaning device for removing hard deposits from the combustion chambers of internal combustion engines comprising a rotatable resilient cylindrical mounting, a cup-shaped base member disposed on one side of said resilient mounting and receiving said resilient mounting therein, a bolt passing through said resilient mounting and said base member, said bolt being substantially centrally located with respect to both said resilient mounting and said rotatable base member, said bolt having an enlarged head engaging a side of said resilient mounting opposite from said one side thereof, nut means on said bolt engagable with said rotatable base member for urging said rotatable base member towards said one side of said resilient mounting, said bolt having a portion extending from the head thereof beyond said nut means and constituting a shank means for engagement with a rotary chuck to rotate said resilient mounting, a plurality of rigid and elongated cleaning elements of substantially equal length mounted in said resilient mounting and extending through and beyond said opposite side of said resilient mounting, said cleaning elements being substantially parallel to and circumferentially arranged with respect to said bolt, said cleaning elements having cleaning means at the ends thereof extending beyond said resilient mounting, each cleaning element being provided with an enlarged head means at the end thereof opposite from said cleaning means, said cleaning elements being mounted in said resilient mounting such that the enlarged head means thereof are grasped between said one side of said resilient mounting and said base member, said cleaning means at the ends of said cleaning elements being in the form of pointed ends adapted to clean the exposed surface of a piston within the combustion chamber, said cleaning elements being longitudinally threaded rearwardly from the pointed ends thereof to provide additional lateral cleaning means adapted to clean the cylindrical walls of the combustion chamber.

3,942,209
PAINT APPLICATOR

David L. Walls, 1204 Sheridan Road, Bremerton, Wash. 98310

Continuation of Ser. No. 357,698, May 7, 1973, abandoned.
This application Sept. 13, 1974, Ser. No. 505,675
Int. Cl.² B05C 17/02
U.S. Cl. 15—118 7 Claims

1. A paint applicator comprising:

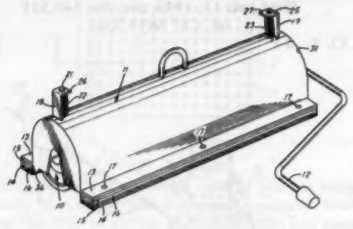
a paint applying roller,

a shaft for said roller, said roller being freely rotatable about the axis of said shaft,

a handle rigidly connected with said shaft for maneuvering ing said roller,

an elongated housing pivotally mounted about said axis and enclosing said roller and having its inner walls spaced from said roller, said housing being open on one side along a plane parallel to said axis and said roller and having a radius greater than the distance from said axis to said plane whereby said roller extends outwardly beyond said opening for engagement with a wall surface to be painted,

a pair of flat straight paint spreading elements one along each longitudinal edge of said opening and having paint smoothing surfaces lying in substantial alignment with the outer face of said roller projecting through said opening whereby said housing is effectively closed along both



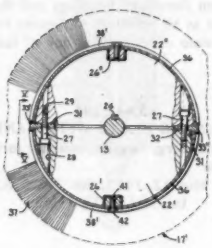
longitudinal sides and is maintained in substantially the same position with respect to the wall to be painted throughout the engagement of said roller with the wall regardless of the angular position of said handle with respect to said housing, and

means affording movement of said housing laterally away from said shaft for affording movement of said roller outwardly of said housing and away from said elements for facilitating the application of paint to said roller.

3,942,210
BRUSH FRAME AND SHELL

Gaylord J. Clark, P.O. Box 710, Coloma, Mich. 49038

Filed Feb. 7, 1974, Ser. No. 440,284
Int. Cl.² A46B 7/10
U.S. Cl. 15—179 5 Claims



1. In a rotary brush construction having rotatable hub means, a plurality of arcuate bristle-carrying brush sections mountable on said hub means, and connecting means for removably mounting the individual brush sections on said hub means, comprising the improvement wherein:

said hub means includes a pair of axially spaced collars adapted to be mounted nonrotatably upon a shaft, and a pair of circumferentially spaced, axially elongated and substantially parallel connecting elements extending axially between and fixedly connected to said pair of collars, said connecting elements being disposed adjacent the peripheries of said collars;

said connecting means coacting between the respective brush sections and one of said connecting elements for individually fixedly connecting the brush sections to said hub means; and

said hub means also including a pair of circumferentially spaced and substantially parallel connecting members

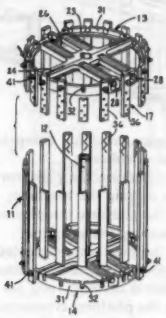
extending axially between said pair of collars, said connecting members projecting outwardly beyond the peripheries of said collars and including laterally projecting flange means spaced outwardly from the peripheries of said collars and disposed for overlapping the adjacent free edges of the brush sections.

3,942,211

BRUSH WITH REMOVABLE BRUSH STRIPS

Gaylord J. Clark, 4679 Paw Paw Lake Road, Coloma, Mich. 49058

Filed Sept. 10, 1974, Ser. No. 504,801
Int. Cl.[2] A46B 7/04, 7/10
U.S. Cl. 15—183 2 Claims



1. In a rotary brush structure adapted for removable attachment to shaft means, said brush structure having a pair of substantially circular end collars adapted for attachment to said shaft means, each end collar having an axially extending circumferential flange, a plurality of elongated bristle carrying members extending axially between said collars, and fastening means for securing said birstle carrying members to the circumferential flanges of said collars, comprising the improvement wherein each of said circumferential flanges has a plurality of circumferentially spaced slots formed therein and extending substantially axially thereof, one end of each slot opening outwardly through one end of the respective circumferential flange, all of the slots associated with all of the circumferential flanges opening outwardly in the same axial direction, and said fastening means including a plurality of fastening devices mounted on said bristle carrying member, there being at least one fastening device mounted on said member and disposed for association with each of said collars, each fastening device including a portion adapted to be slidably inserted into one of said slots through the open end thereof, whereby the individual bristle carrying member can be attached to or removed from the collars by slidable movement of the bristle carrying member relative to the collars in the lengthwise direction thereof, said fastening device comprising a threaded fastening member mounted on said bristle carrying member and removable therewith from said collars, said bristle carrying member having an opening extending therethrough, said threaded fastening member including a shank extending through said opening and being of sufficient length so as to also extend through one of said slots, said threaded fastening member also having an enlarged head portion formed on the inner end thereof as disposed adjacent the inner side of said bristle carrying member, a threaded element engaged with the other end of said shank for connecting said fastening device to said bristle carrying member, and said shank having a portion of noncircular cross section disposed adjacent said head and adapted for slidable engagement within one of said slots for preventing rotation of said shank relative to the collar.

3,942,212

WINDSHIELD WIPER ASSEMBLY

Werner Thomas Steger, 2150 Peartree Road, Mississauga, Ontario; Brian Glynn, 452 Arlington Blvd., Burlington, Ontario, and Donald Earl Emmons, R.R. No. 2, Brampton, Ontario, all of Canada

Filed Jan. 21, 1975, Ser. No. 542,718
Int. Cl.[2] B60S 1/38
U.S. Cl. 15—250.42 16 Claims

1. A windshield wiper assembly comprising an elongated squeegee formed of a flexible material; a backing element operatively connected to the squeegee and extending lengthwise thereof; and a superstructure removably connected to said backing element and adapted to be connected to a windshield wiper arm for urging the squeegee towards the windshield; said superstructure comprising an elongated primary yoke having a pair of spaced opposite free ends and a pair of secondary yokes respectively pivotally mounted on the free ends of said primary yoke; said secondary yokes including means for releasably engaging said backing element; said primary yoke having a generally triangularly shaped transverse cross section through substantially its entire length defined by a pair of inclined longitudinally extending side surfaces and a substantially flat base which extends parallel to and in spaced relation from the backing element; said inclined side surfaces defining an apex therebetween located generally along the longitudinal axis of the primary yoke and flare outwardly therefrom; said secondary yokes each having a similar triangularly shaped transverse cross section through substantially their entire length defined by outwardly flaring side surfaces and a substantially flat base; said side surfaces of the primary and secondary yokes presenting inclined pressure surfaces to an air stream, moving over the surface to be wiped, whereby downward components of force are produced on the primary and secondary yokes which increases the downward pressure of the squeegee on the windshield and resists windlift effects on the assembly; said flat base of the primary and secondary yokes providing a smooth channel between the yokes and the backing elements to minimize windlift producing turbulence of air passing through the assembly.

3,942,213

WINDOW WALL WASHING DEVICE FOR HIGH RISE BUILDINGS

Ralph H. Hoener, Jr., University City, Mo., assignor to H. H. Robertson Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 229,846, Feb. 28, 1972, abandoned, which is a continuation-in-part of Ser. No. 130,616, April 2, 1971, abandoned. This application July 31, 1973, Ser. No. 384,284
Int. Cl. A47l 1/04
U.S. Cl. 15—302 56 Claims

1. In a building exterior wall washing device, the combination of

a housing comprising

a boundary wall having a forward edge, and

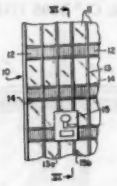
a rear wall cooperating with said boundary wall to define a chamber;

a sight disposed in an essentially vertical plane defined by the said housing and being essentially unobstructed at the said forward edge of said housing;

liquid distributing means within said chamber for directing liquid through the said sight;

plural spaced-apart spacing members located exteriorly of said housing maintaining the said housing in a spaced-apart relation from the said exterior wall;

means for providing a high velocity in-rushing gas curtain at the said forward edge of the said housing to preclude



substantial egress of said liquid between the said forward edge and the said exterior wall;

means communicating with said chamber at a location spaced from said forward edge for removing liquid from said chamber; and

conduit means for extracting at least a portion of the said gas from the said chamber.

3,942,214

WASHING AND VACUUMING VEHICLE CONSTRUCTION

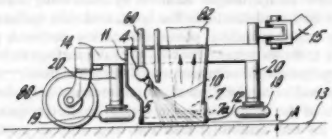
Wolfgang Maasberg, Krudenburg, Germany, assignor to Woma-Apparatebau, Wolfgang Maasberg & Co. GmbH, Rheinhausen, Germany

Filed May 9, 1974, Ser. No. 468,362

Claims priority, application Germany, May 10, 1973, 2323588

Int. Cl.² E01H 1/08, 1/10

U.S. Cl. 15—320 **9 Claims**



1. A washing and suction device comprising a vehicle having a body with wheels for moving it along the ground, a water supply tank on said body, a suction producing device on said body, a suction shoe having a lower end spaced above the ground and its opposite end being in fluid communication with said suction producing device, a hood carried by said body and located therebelow and enclosing said suction shoe and having a bottom with a suction opening, a spray conduit connected to said tank and having a nozzle terminating inside said hood behind said suction shoe and directing a wash spray forwardly in a travel direction toward said suction shoe, and a skirt extending around the perimeter of said bottom opening of said hood and spaced above the ground so as to provide a perimetric slot opening between said skirt and the ground to facilitate the inflow of air and debris to said suction shoe, and to confine said wash spray and raised debris within said hood to diminish pollution of the ambience thereby.

9. A washing and suction device according to claim 1, including a slurry receiving tank in said vehicle body, a return conduit connected between said slurry receiving tank and said water supply tank having strainer means for straining the contents of said receiving tank and permitting the flow of the water therein back to said water supply tank, and a flexible connection extending from said suction shoe into said receiving tank, said receiving tank being connected to said suction producing device.

3,942,215

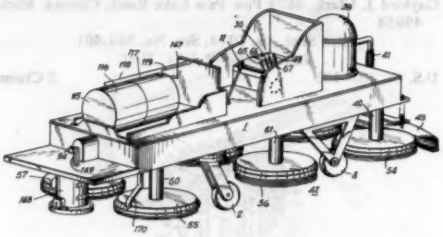
FLOOR MAINTENANCE MACHINE

James O. Olds, 145-18 105th Ave., Jamaica, N.Y. 11435

Continuation-in-part of Ser. No. 305,835, Nov. 13, 1972, abandoned. This application Aug. 29, 1974, Ser. No. 501,647

Int. Cl.² A47L 7/00

U.S. Cl. 15—320 **5 Claims**



1. A floor maintenance machine, comprising

a platform mounted on wheels;

an electric power system on the platform coupled to some of the wheels for driving the machine;

steering means on the platform coupled to selected ones of the wheels for steering the machine;

vacuum means on the platform connected to and operated by the electric power system for vacuuming a floor on which the machine is driven;

brushing means on the platform connected to and operated by the electric power system for performing selected operations on the floor, said brushing means comprising a plurality of brushes selectively manually coupled to the brushing means;

washing means on the platform for washing the floor, said washing means comprising a storage drum having two independent compartments, one containing a detergent and water solution and the other containing rinse water when washing and liquid wax when waxing;

waxing means on the platform connected to and operated by the electric power system for waxing the floor, said waxing means including a wax drum movably mounted on the platform, a wax plunger movably mounted on the wax drum, and control means coupled to the wax drum for selectively raising and lowering the wax drum out of and into contact with a surface supporting the machine and coupled to the wax plunger for selectively moving said wax plunger in axial directions in said wax drum; and

machine control means coupled to the electric power system for selectively controlling the operation of the vacuum means, the brushing means and the waxing means.

3,942,216

NOZZLE WITH EDGE CLEANING

Keith G. Minton, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio

Filed Mar. 4, 1974, Ser. No. 447,646

Int. Cl.² A47L 9/02

U.S. Cl. 15—331 **4 Claims**

1. A nozzle having an edge cleaning function including:

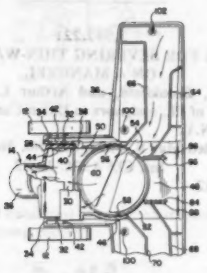
a. an upper shell member forming at least partially a housing for said nozzle,

b. an intermediate member disposed against said upper shell member,

c. conduit means formed between said upper shell member and said intermediate member for providing for a suction air flow for said edge cleaning function,

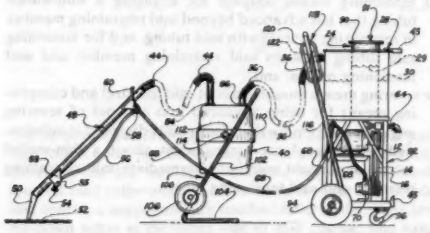
d. a bottom plate wear member attached to said upper shell member and sandwiching said intermediate member therebetween,

e. said nozzle also including a conduit means for providing for a suction air flow for a normal forward cleaning function,
f. a rotary valve means providing selective communication with a suction source and one of said conduit means for providing a suction flow of air for selective edge and forward cleaning for said nozzle,
g. said rotary valve means including a rotary valve member that rotates on a generally vertical axis,
h. said rotary valve member being movingly disposed in a means for journalling the same formed by at least partially circular vertically extending walls,



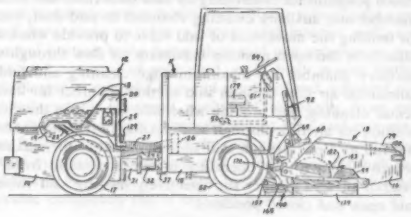
i. terminations of said vertical extending walls providing openings for the passage of a suction flow of air within said nozzle,
j. said rotary valve member including a vertically extending slotted rim, having at least a pair of vertically aligned slots for the passage of a suction flow of air,
k. said openings including at least a pair of front and rear openings formed by terminations of said vertical walls, said front and rear openings also being vertically aligned, and
l. said front opening of said openings formed by terminations of said vertical walls communicating with said conduit means for forward and edge cleaning.

3,942,217
CARPET CLEANING MACHINE
Jack A. Bates, 2530 Fishinger Road, Columbus, Ohio 43221
Continuation of Ser. No. 260,586, June 7, 1972, abandoned. This application May 20, 1974, Ser. No. 471,508
Int. Cl.² A47L 7/00
U.S. Cl. 15—321 **11 Claims**



1. A carpet cleaning machine comprising, in combination, wheeled frame means; a cleaning fluid reservoir mounted on the upper portion of said frame means and including a cleaning fluid reservoir outlet; a dirty fluid collecting means on the upper portion of said frame means and including a collecting means inlet and outlet; blower means mounted on said frame means below said collecting means and including a blower inlet communicating with said outlet of said dirty fluid collecting means and a blower outlet communicating with the environment; pump means mounted below said reservoir means and including a pump including a pump inlet communicating with said cleaning fluid reservoir outlet and a pump outlet; a manually manipulatable carpet cleaning tool including a tool outlet for dispensing said cleaning fluid and a tool inlet for collecting dirty fluid; passage means for delivering said cleaning fluid from said pump outlet to said tool outlet; second passage means for delivering said dirty fluid from said tool inlet to said collecting means inlet; motor means mounted on said frame means for driving said blower means and pump means; and rotary loading means on the upper portion of said frame means for supporting the top of the machine when loading said machine on a truck bed or the like.

3,942,218
SCRUBBING MACHINE
Keith N. Krier; Neil F. Brown, and Steven J. A. Waldhauser, all of Minneapolis, Minn., assignors to Tennant Company, Minneapolis, Minn.
Division of Ser. No. 255,612, May 22, 1972, Pat. No. 3,824,645. This application June 19, 1974, Ser. No. 480,973
Int. Cl.² A47L 11/29
U.S. Cl. 15—340 **13 Claims**

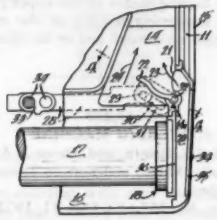


1. A maintenance machine for surfaces such as a floor or the like comprising a vehicle having a frame, ground engaging wheels and a dirty scrubbing liquid collection tank, a power driven brush, first means for mounting the brush on the frame, squeegee means mounted on at least one of the frame and the first means for collecting scrubbing liquid from the surface over which the brush is moved, said squeegee means including a squeegee assembly having a central portion, and forwardly and transversely extending elongated portions joined to the central portion and extending outwardly on either transverse side thereof, said squeegee assembly being of a transverse width of at least about as great as said brush and extending transversely rearwardly of the brush, a first liquid collection member having an inlet located adjacent the squeegee assembly central portion for withdrawing liquid from the surface between the central portion and the brush, a second liquid collection member having an inlet located adjacent one of the forwardly and transversely extending elongated portions, remote from the squeegee assembly central portion and transversely offset from the first collection member inlet for withdrawing liquid from the surface between the squeegee assembly and the brush, and second means connected to the tank and to each of said collection members for drawing liquid from the surface and through the collection members and transferring the liquid to the tank.

3,942,219
VACUUM CLEANER HAVING EDGE CLEANING FEATURES

Robert Edward Johnson, St. Paul, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed June 3, 1974, Ser. No. 475,973
The portion of the term of this patent subsequent to Feb. 10, 1993, has been disclaimed.
Int. Cl.² A47L *9/00*
U.S. Cl. 15—383 **10 Claims**

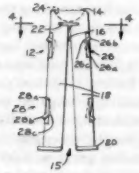


1. A vacuum cleaner having edge cleaning features, said vacuum cleaner comprising: a cleaner body having a surface contacting suction chamber, a suction duct leading from said chamber, and an edge auxiliary cleaning chamber at an end of said suction chamber communicating through a port with said suction duct; an internal valve movable between open and closed positions for controlling air flow both from said suction chamber and auxiliary cleaning chamber to said duct; means for limiting the movement of said valve to provide when said valve is in the open position maximum air flow through said auxiliary chamber for maximum edge cleaning and limited substantial air flow through said suction chamber for limited center cleaning, and provide when said valve is in the closed position no air flow through said auxiliary cleaning chamber and full air flow through said suction chamber for maximum center cleaning; and operating means accessible from the exterior of said cleaner for selectively moving said valve to said open and closed positions.

3,942,220
CASTER SLEEVE

Leroy J. Wood, Chicago, and Edward J. Zych, Des Plaines, both of Ill., assignors to Haydock Caster Company, Niles, Ill.

Filed Nov. 21, 1974, Ser. No. 525,918
Int. Cl.² A47B *91/00*
U.S. Cl. 16—43 **7 Claims**



1. A caster sleeve for use in conjunction with a caster having a stem with a head on a shank, the head being of greater diameter than the immediately adjacent portion of the shank, comprising,

a generally tubular integral sleeve adapted for insertion into a cavity in a furniture piece and having a closed upper end and an open lower end, the closed upper end being continuous through its transverse extent,

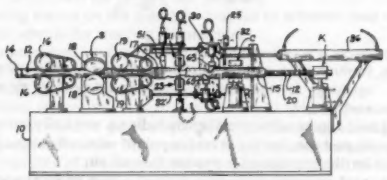
the sleeve being slotted longitudinally on diametrically opposite sides from a position adjacent the closed upper end to and through the open lower end forming a pair of diametrically opposite legs flexible toward and from each other,

the legs including upper and lower prongs struck from the integral portions of the legs, the prongs having points normally adjacent the outer surface of the sleeve and elbows normally extending inwardly of the inner surface of the sleeve, whereby in response to insertion of the caster stem into the sleeve, the head of the stem forces the prongs outwardly into penetrating engagement with the wall of the cavity, and the elbows of the upper prongs remain at least slightly inwardly of the inner surface of the sleeve and releasably retain the caster in the sleeve.

3,942,221
APPARATUS FOR SEVERING THIN-WALLED TUBING ON A MANDREL

Frank Sipusic, Brookfield, and Arthur L. Sheridan, Woodridge, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Filed May 8, 1974, Ser. No. 468,106
Int. Cl.² A22C *13/02*
U.S. Cl. 17—42 **8 Claims**



1. Apparatus for automatically severing flexible, thin-walled tubing of indefinite length into a plurality of segments comprising in combination:

a a support mandrel;

b means for advancing a continuous length of flexible, thin-walled tubing about said mandrel;

c a movably mounted restraining member adaptable to restrain the advance of a thin-walled tubing at a predetermined position on said mandrel intermediate the ends of the tubing;

d tensioning means adapted for engaging a thin-walled tubing that has advanced beyond said restraining member in restraining contact with said tubing, and for tensioning said tubing between said restraining member and said tensioning means; and

e severing means mounted about said mandrel and comprising means for being advanced into and out of severing engagement at more than four points disposed in substantially circular planar arrangement about a thin-walled tubing about said mandrel intermediate said restraining member and said tensioning means.

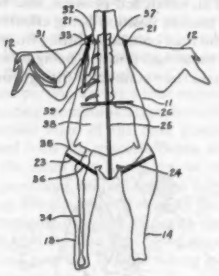
3,942,222
POULTRY, PARTIALLY DISJOINTED

Eldon J. Strandine, Chicago, and Sidney Malinow, Oak Lawn, both of Ill., assignors to Swift & Company, Chicago, Ill.

Filed Sept. 30, 1974, Ser. No. 510,696
Int. Cl.² A22C *21/00*
U.S. Cl. 17—45 **19 Claims**

1. An improved eviscerated poultry carcass having a plurality of incisions positioned on the carcass at selected locations,

said incisions including partial severances of both shoulder joints and knee joints, to provide an article processed as a



whole carcass and exhibiting ease of separation of the carcass into individual serving pieces.

3,942,223

STAPLE DRAFT DEVICES

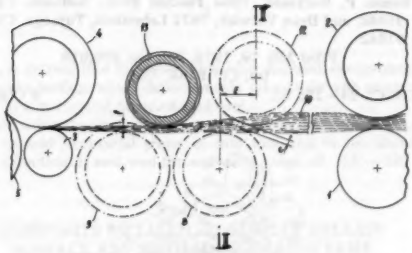
Gauvain Roger, Buhl, France, assignor to Societe Alsacienne de Constructions Mecaniques de Mulhouse, Mulhouse, France

Filed Mar. 11, 1974, Ser. No. 450,151

Claims priority, application France, Mar. 13, 1973, 73.08809

Int. Cl.[2] D01H *5/24*

U.S. Cl. 19—258 3 Claims



1. A device for drawing textile fibers, comprising a pair of feed rollers and a pair of drawing rollers said pairs determining therebetween the course of a staple lap to be drafted; a toothed feed roller and a toothed control roller at one side of said course; a supplementary toothed roller and a single levelling-down roller at the other side of said course; said supplementary toothed roller being situated rearwardly of said toothed feed roller in relation to the direction of progress of a staple lap through said device, and being positioned to form a nip solely with said toothed feed roller; said single levelling-down roller being smooth surfaced and positioned a short distance upstream relative to said toothed control roller in relation to the direction of progress of a staple lap through said device while forming a nip solely with said toothed control roller.

3,942,224

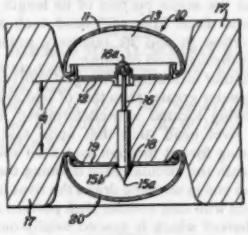
BUTTONING MEANS

Peter David Benmax, 2 Park Close, Ellesmere Road, Chiswick, London W.4, England

Filed Dec. 18, 1973, Ser. No. 425,733

Int. Cl.[2] A44B *1/18*

U.S. Cl. 24—90 B 3 Claims



1. A buttoning means comprising in combination a pair of hollow tufting buttons at least one of which has an interior wall and each of which are provided with base plate members, said base plate members being provided with centrally disposed apertures capable of being aligned on opposite side portions of material to be tufted, a substantially rigid, elongated shank having a major portion extending to one end of uniform diameter slidably arranged in one of said apertures, a cord secured to one end of said shank and having an enlarged terminal portion positioned on one side of said apertured base plate member adjacent said interior wall, said terminal portion being larger than said one aperture to prevent total removal of said cord, said shank means further including at its opposite free end a pointed end, adjacent said pointed end an abutment positioned outwardly from said shank having a greater transverse extent than said one aperture for permanent insertion in said aperture of said other button upon the pointed end end being forced through said material to be tufted, said major portion of said shank being movable completely out of said one aperture.

3,942,225

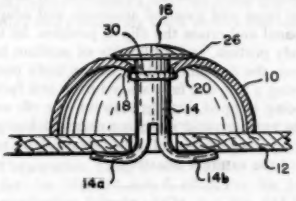
SUPPORTING BUTTON FOR ARTICLES OF LUGGAGE, ETC.

Hyman Kramer, 1457 Bassett Ave., Bronx, N.Y. 10461

Filed Oct. 8, 1974, Ser. No. 513,059

Int. Cl.[2] A44B *1/42*; A45C *5/00*

U.S. Cl. 24—94 8 Claims



1. A supporting button for attachment to the under side of the bottom wall or member of an article of luggage, a hand-carried case, a golf bag, etc. and being operative to support said bottom wall or member slightly raised from an out of direct contact with a usually horizontal surface on which said article is rested, comprising:

a hollow metal shell having an axial opening and which is adapted to be secured hollow-side-up against the underside of said bottom wall;

said axial opening being defined by a generally circular edge encircled by an annular shell portion which inclines an appreciable distance into the hollow of the shell proper;

a rivet extending through said axial shell opening and comprising a head having a generally planar under face and outer-edge diameter which is substantially greater than that of said axial shell opening and an integral elongate shank extending from said head and having diameter throughout the major portion of its length as measured from its end distal from said head such as permits its ready insertion in and its relatively unimpeded axial movement through said opening;

said shank further including an integral short-length portion having diameter greater than that of said axial shell opening and being located a predetermined axial distance from the rivet head such that upon said short-length portion being forced through said axial shell opening it locks beneath the circular edge defining the same with a snap action and in so doing draws the rivet head into tight engagement with said annular shell portion along a circular line thereof which is spaced axially-outwardly from said circular edge of the axial shell opening.

3,942,226

LENS MOUNTING CLIPS

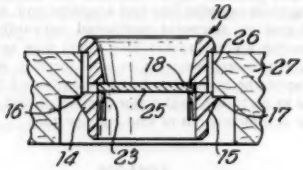
Barry Roger Michael Barnett, West Drayton; Gerald Francis Alley, Ickenham, and Brian Arthur Saunders, Hayes, all of England, assignors to TRW Inc., Cleveland, Ohio

Filed Dec. 5, 1974, Ser. No. 530,029

Claims priority, application United Kingdom, Dec. 7, 1973, 56907

Int. Cl.² A44B *17/00*; G12B *9/00*

U.S. Cl. 24—208 A **5 Claims**



1. A clip for mounting a disc in an aperture in a panel, comprising a tubular body portion which can be inserted through the aperture in the panel, and external abutment on said tubular body portion adapted to limit insertion of said body portion of the clip through the aperture, resiliently, radially compressible external projections on said body portion spaced from said external abutment and adapted to engage the panel and retain the clip in position, an internal rib on said body portion, and a plurality of resilient tongues extending from the internal surface of the body portion, each tongue having a free end face spaced from and facing the rib, the disc being trapped, in use, between the rib and the end faces of the tongues, said rib being disposed in a plane lying between the plane of the end faces of the resilient tongues and the plane of the external abutment.

3,942,227

PARACHUTE RISER BUCKLE

John J. Phillips, Rolling Hills, and Thomas A. Clark, Santa Monica, both of Calif., assignors to G&H Technology, Inc., Santa Monica, Calif.

Filed Aug. 9, 1974, Ser. No. 496,111

Int. Cl.² A44B *11/06*

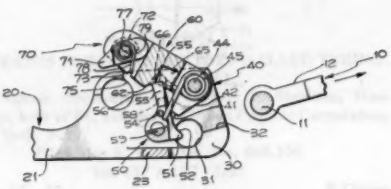
U.S. Cl. 24—230 A **11 Claims**

1. A parachute riser buckle for selectively securing and releasing a connector fitting on the parachute riser comprising,

a buckle body,

a guide on said buckle body, said guide being effective to engage said fitting and guide said fitting into said buckle body and into the position where it is held,

blocking means on said buckle body adjacent to said guide, said blocking means being movable between a latched position and an unlatched position, said blocking means when in the latched position being effective to block the removal of the riser connector fitting from said guide and when in the unlatched position being effective to permit removal of said riser connector fitting from said guide,



latch preventing means on said buckle body movable between a first position and a second position, said latch preventing means when in the first position being effective to prevent said blocking means from returning to its latched position from its unlatched position except when said riser connector fitting is in the position where it is held in said guide and its removal is blocked by said blocking means in its latched position to thereby prevent incorrect and non-positive latching of said blocking means with said riser connecting portion, and

means on said blocking means to move said latch preventing means to its first position when said blocking means is rotated to its unlatched position.

3,942,228

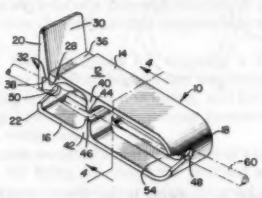
TUBING CLAMP

Thomas P. Buckman, 7804 Foothill Blvd., Sunland, Calif. 91040, and Dean Vorwick, 7621 Lebesthon, Tujunga, Calif. 91042

Filed July 19, 1974, Ser. No. 490,018

Int. Cl.² F16K *7/06*

U.S. Cl. 24—255 SL **4 Claims**



1. A clamp adapted for mounting on flexible tubing, by means of a single hand, said tubing being positioned between clamping elements which control flow through the tubing, said clamp comprising a body, U-shaped in cross section, having generally parallel upper and lower legs connected by a curved base portion,

aligned tubing clamping elements extending upwardly from the lower body legs and downwardly from the upper body leg intermediate the length of said legs,

a flexible catch arm extending upwardly from the free end of the lower leg and projecting beyond the upper leg, a catch member on the catch arm facing the upper leg extremity,

a latch on the free end of the upper body leg with its end surface in engagement with the confronting face on the catch arm, cooperating cam surfaces on the engaging portions of the latch and catch arm whereby movement of the upper body leg toward the lower body leg causes the catch arm to be cammed outwardly away from the latch so that the latch may proceed downwardly below the catch whereupon the catch arm swings toward the latch so that the catch engages the latch and the tubing positioned between the clamping elements is compressed to prevent flow therethrough, and

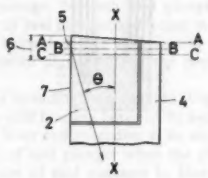
the curved base portion having a tube receiving opening and a slot providing communication between said opening and the outside edge of the base portion said opening being aligned with the space between the clamping elements and the catch arm having a tube receiving opening and a slot providing communication between said catch arm opening and the outside edge of the catch arm, said catch arm opening being aligned with the opening in the curved base portion, said slots being aligned and adapted to receive and pass the flexible tubing into the aforesaid tube receiving openings.

3,942,229

CUTTING TOOL FOR CONTROLLING CHIP DISPOSAL

Hidehiko Takeyama, Tokyo, and Tsutomu Yato, Komae, both of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Apr. 1, 1974, Ser. No. 456,440
Claims priority, application Japan, June 5, 1973, 48-63142
Int. Cl.² B26D *1/00*
U.S. Cl. 29—95 R **2 Claims**



1. A cutting tool for controlling chip disposal, comprising:

a rake surface which defines a side rake angle with respect to a horizontal plane of said tool,

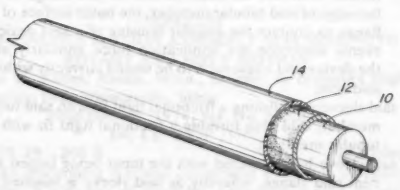
said side rake angle being continuously varied with respect to said horizontal plane of said tool and in the shank direction of said tool throughout a range of −15°–+10°.

3,942,230

COMPOSITE METALLIC ROLL WITH RELEASE SURFACE AND METHOD OF MAKING SAME

Thomas E. Nalband, Cheshire, Conn., assignor to Plasma Coatings, Inc., Cheshire, Conn.

Filed Mar. 5, 1974, Ser. No. 448,340
Int. Cl.² B21B *31/08*
U.S. Cl. 29—132 **12 Claims**



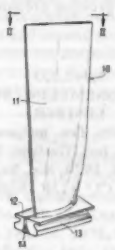
1. A composite metallic roll or the like comprising a body member, a porous plate to a depth of 0.002 to 0.003 of an inch and comprising stainless steel, nickel, nickel chromium, molybdenum, a carbide, or a ceramic flame sprayed over the body member, and a continuous film of a fluorocarbon polymer impregnated into said porous plate for a gradual exposure over a predetermined life, said fluorocarbon polymer comprising tetrafluoroethylene, hexafluoropropylene, monochlorotrifluoroethylene, or tetrafluoroethylene-hexafluoropropylene.

3,942,231

CONTOUR FORMED METAL MATRIX BLADE PLIES

Richard A. Whitaker, Willoughby, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Oct. 31, 1973, Ser. No. 411,316
Int. Cl.² F01D *5/14*; B23P *15/04*
U.S. Cl. 29—156.8 B **4 Claims**



1. The method of forming a turbine blade having predetermined contour and axial twist comprises providing a plurality of plies of consolidated monotape, each of said plies being made up of collimated filaments surrounded by enough dense matrix metal to provide a lamella of the desired filament volume fraction, pre-sizing and shaping each of said plies both unidirectionally and off-axis to the very shape and final position it will assume during fusion bonding in the final blade, stacking said pre-sized and shaped tapes together with cover sheets and root inserts into an accurate fully debulked blade preform with the lateral edges of the plies defining the surfaces of the blade, and diffusion bonding said plies together under heat and pressure to form the finished blade, thereby avoiding dislocation or breakage of filaments due to shifting during bonding and minimizing voids, cracks and inclusions in the matrix.

3,942,232

VENT STRUCTURE FABRICATION METHOD

Joseph C. McGuire, Kennewick, Wash., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

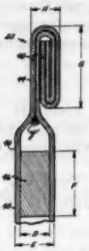
Division of Ser. No. 376,527, July 5, 1973, Pat. No. 3,803,816.
This application Feb. 11, 1974, Ser. No. 441,589
Int. Cl.² G21C *7/10*
U.S. Cl. 29—157 C **10 Claims**

1. A method of fabricating a vent structure, which comprises the steps of:

installing a predetermined amount of yarn in a normally upper portion of a tubing of predetermined length and size;

flattening said upper tubing portion at a predetermined flattening pressure, said yarn being compressed between opposing faces of said flattened tubing portion;

coiling said flattened tubing portion against itself; and pressing diametrically to flatten said coiled tubing portion



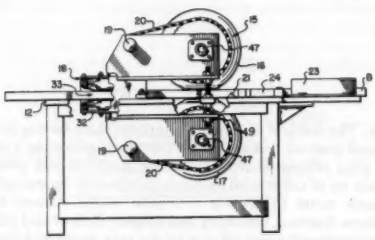
at a predetermined pressing pressure whereby said vent structure is formed.

3,942,233

APPARATUS FOR ASSEMBLING FINGER JOINTED LUMBER

Jeff Y. Cromeens, Mesquite, Tex., assignor to Industrial Woodworking Machine Co., Inc., Garland, Tex.

Filed Oct. 15, 1974, Ser. No. 514,457
Int. Cl.² B23P *19/00*
U.S. Cl. 29—200 R **6 Claims**



1. An apparatus for assembling finger jointed lumber from a pair of boards of short lengths, having finger joint grooves formed in their adjacent end faces and in partially interlocked engagement, comprising

a platform for receiving the and supporting a pair of boards of short lengths in end-to-end alignment for lengthwise travel thereon;

first and second pneumatic tires;

means for rotatably mounting said tires at an infeed portion of said platform thereabove and therebelow for engaging the boards therebetween;

means for driving said tires to impart movement serially to said pair of boards for conveying them along said platform;

retarding means immediately downstream of and in close proximity to said tires for serially engaging said pair of boards and applying a uniform normal pressure and frictional resistance thereto for retarding the lengthwise travel thereof and producing longitudinal compression and complete interengagement of said pair of finger jointed boards;

an elongate guide member at the infeed portion of said platform adjacently upstream of said tires and in alignment with one of the longitudinal margins of the path of lengthwise travel of said boards;

means pivotally attaching the upstream end of the guide member to said platform; and

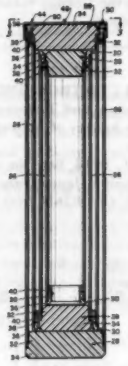
resilient means outwardly of said guide member for maintaining said member in its aligned position as well as permitting lateral outward pivoting thereof with the upstream end portion of the trailing board of said pair of boards when said upstream board end portion is out of alignment with said lengthwise travel path.

3,942,234

SEAL AND BEARING INSTALLATION TOOL

Larry A. Kepler, 1755 Granville AVe. No. 5, West Los Angeles, Calif. 90025

Filed July 8, 1974, Ser. No. 486,371
Int. Cl.² B23P *19/04*
U.S. Cl. 29—201 R **4 Claims**



1. An installation tool for installing devices such as seals and bearings within a seat, said tool comprising:

a tubular member having a hollow chamber open at both ends;

a cap located within one of said ends, said cap including a plug which closely interfits in a telescoping manner within said tubular member, said cap to be struck by a hammer with said cap distributing the application force of the hammer to said tubular member;

a force distribution member connected to the other of said ends, said force distribution member including a sleeve integrally attached to said flange, said sleeve telescopingly cooperating in a tight fitting manner within said tubular member, the inner surface of said flange to abut the edge of said tubular member, the outer surface of said flange to contact the annular housing of a said device to evenly distribute the application force annularly about the device and cause such to be seated correctly within its said seat;

said sleeve establishing a frictional tight fit with said tubular member, said plug forming a frictional tight fit with said tubular member;

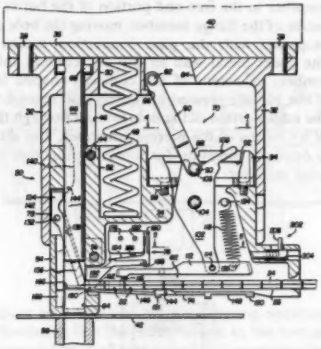
said sleeve being tapered with the taper being largest adjacent said flange, whereby as said sleeve is inserted into said tubular member the frictional fit in between said tubular member and said sleeve increases in tightness due to said taper.

3,942,235

FASTENER INSTALLATION HEAD

Dale H. Goodsmith, and Harold A. Ladouceur, both of Livonia, Mich., assignors to Multifastener Corporation, Detroit, Mich.

Filed May 5, 1975, Ser. No. 574,772
Int. Cl.² B23P 19/04
U.S. Cl. 29—208 D 7 Claims



1. In a fastener installation head having a first passage receiving the fasteners for installation by said head, a second transverse passage intersecting and communicating with said first passage, a plunger reciprocating in said second passage, a feed means adapted to feed a fastener from said first passage to said second passage, beneath said plunger, during each downward stroke of said plunger and a stop means preventing a fastener from being fed into said second passage except during said downward plunger stoke, the improvement comprising:

said stop means including an elongated stop lever pivotally connected to said housing between its ends adjacent said plunger, one lever end extending at an angle to the reciprocating axis of said plunger when the plunger is above the intersection of said passages to block said first nut passage at the entrance to said second passage and the second lever end engaging said plunger when said plunger, is spaced above the intersection of said passages, said plunger having an inclined camming face at the plunger end generally parallel to said lever angle and said plunger having a cut-out portion spaced above said camming face, said plunger camming face and cut-out facing said stop lever, whereby downward movement of said plunger engages said camming face against said first lever end, rotating said lever end about its pivot axis and said second lever end rotating into said plunger cut-out permitting a fastener to be fed into said passage, and said cut-out having a camming face, whereby upward movement of said plunger engages said cut-out camming face against said second lever end, rotating said lever in the opposite direction and returning said lever to its locked position.

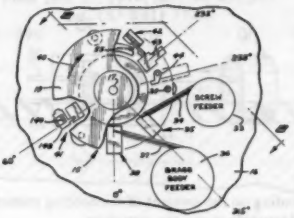
3,942,236

CONTINUOUS MOTION ASSEMBLY MACHINE WITH ROTARY ASSEMBLY MOTION

James W. Elmer, Anoka, Minn., assignor to Inventors Engineering, Inc., Minneapolis, Minn.

Filed Dec. 16, 1974, Ser. No. 533,330
Int. Cl.² B23P 19/04
U.S. Cl. 29—208 R 10 Claims

1. An assembling machine comprising a rotating mounting member, a plurality of assembly stations mounted on said rotating member each having an assembly member, each of said assembly members including means for receiving a first part to be assembled, means movable with said mounting member for receiving a second part to be assembled in position spaced from each of said assembly members, and means to mount each assembly member on its assembly station to cause motion of said assembly member toward said second



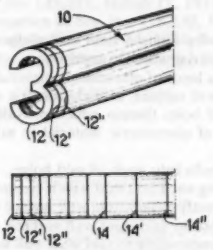
part and to thereby cause engagement of the first and second parts in each assembly station, and means to relatively rotate said first and second parts at each assembly station to rotationally assemble said first and second parts as the corresponding assembly member moves toward said second part including torque limiting means to limit the amount of torque that can be exerted between said first and second parts.

3,942,237

PRODUCTION OF TRIDIMENSIONAL INDICATIVE AND/OR DECORATIVE PIECES

Giovanni Ongaro, 4, Via Castelmorrone, Milan, Italy

Continuation of Ser. No. 299,424, Oct. 11, 1972, abandoned.
This application Feb. 24, 1975, Ser. No. 552,309
Claims priority, application Italy, Oct. 20, 1971, 30084/71
Int. Cl.² B23P 17/00
U.S. Cl. 29—417 9 Claims



1. A method for producing a legible sign consisting of a plurality of tridimensional legible graphic symbols such as alphanumeric characters comprising the steps of providing a plurality of elongated members each having a cross-sectional configuration in the form of one of said graphic symbols, there being provided at least one elongated member with a cross-sectional configuration in the form of each one of said graphic symbols, each of said elongated members having a longitudinal axis extending generally perpendicularly to its cross-sectional configuration, cutting said elongated members along planes extending transversely of said respective longitudinal axes to form therefrom said plurality of graphic symbols of which said legible sign consists, and arranging said cut graphic symbols in a predetermined sequence to form said legible sign.

3,942,238

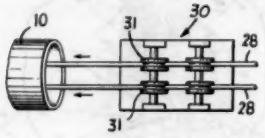
METHOD FOR REINFORCING STRUCTURES

Jean Pierre Dore, 159 Debruxielle, Ontario, Canada

Filed Apr. 22, 1974, Ser. No. 462,973
Int. Cl.² B23P 19/04
U.S. Cl. 29—433 10 Claims

1. A method of inserting reinforcing strands into a conduit extending through a structure to be stressed and then placing the strands under tension in the conduit, comprising

selectively pushing a plurality of separate strands one-by-one through the conduit forming a group of strands of variable number therein, whereby the number of strands pushed through the conduit may be varied from job to job



depending on the amount of reinforcing material required to adequately stress the structure,

tensioning the group of strands, and

anchoring the group of strands to the structure in order to maintain the group of strands under tension.

3,942,239

METHOD OF LINING A STEEL STRUCTURE

Gert Johansson, Skelleftea, Sweden, assignor to Skega Aktiebolag, Ersmark, Sweden

Filed Mar. 5, 1974, Ser. No. 448,421

Claims priority, application Sweden, Mar. 6, 1973, 7303134

Int. Cl.² B61D *17/18*

U.S. Cl. 29—462 **1 Claim**

1. A method for lining a steel wall surface with a layer of elastomeric material which comprises:

a. disposing a layer of elastomeric material directly against said steel wall surface, said elastomeric material having a plurality of holes therein which provide access through said layer of elastomeric material to said steel wall surface,

b. inserting bolts into each of said holes,

c. butt welding each bolt end which contacts said steel wall surface directly to said steel wall surface so that each bolt, when welded to said steel wall surface, extends substantially perpendicularly to said steel wall surface, the end of the bolt furthest from steel wall surface being threaded,

d. placing a washer over the threaded end of each bolt and resting it against a recessed shoulder portion of said elastomeric material that is spaced away from said steel wall surface,

e. tightening a nut on the threaded end of each bolt so as to both press said washer downwardly against said elastomeric material and to press said elastomeric material against said steel wall surface, and

f. inserting a cylinder of elastomeric material into the hole above said nut after the nut is tightened on said bolt.

3,942,240

METHOD FOR THE ATTACHMENT OF TUBULAR PIPE CONNECTION MEANS TO A SHEET METAL WALL AND A DEVICE ACCORDING TO THE METHOD

Sven Runo Vilhelm Gebelius, Fridhemsgatan 27, Stockholm, Sweden (S-11240)

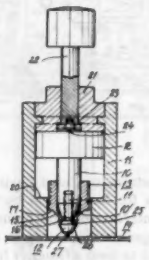
Filed Nov. 20, 1974, Ser. No. 525,636

Claims priority, application Sweden, Nov. 30, 1973, 7316255

Int. Cl.² B21D *39/00;* **B23P** *11/00;* **B25C** *1/08*

U.S. Cl. 29—512 **11 Claims**

1. A method of attaching a tubular pipe connection means to a sheet metal wall, such as a storage tank or similar structure, in which an end portion of the pipe connection means attachable to the sheet metal wall is provided with an inwardly inclined conical collar having at its free end portion an outwardly directed conical flange member; comprising the steps of providing a bar with a conically-shaped free end portion; inserting the movable bar into the pipe connection means so that the free end portion thereof contacts the inside of the collar of the pipe connection means; attaching a conical hole piercing member to the free end portion of the bar in contact with the inside of the flange member; moving the hole piercing member together with the pipe connection means axially through the sheet metal wall so that the conical collar and flange member, by means of the conically-shaped free end portion of the bar are pressed outwardly and caused to bend and grip the edge portion of the hole formed through the sheet metal wall by means of the piercing member; and sliding the bar in the opposite direction for removing together with the hole piercing member.



3. In a device for the attachment of a tubular pipe connection means to a sheet metal wall, such as a storage tank or similar structure, in which an end portion of the pipe connection means attachable to the sheet metal wall is provided with an inwardly inclined conical collar having at the free end portion an outwardly inclined, conical flange member; a bar slidably inserted in the pipe connection, the bar having a conically-shaped free end portion arranged to make contact with the inside of the collar; a conically-shaped hole piercing member insertable into the free end portion of the bar and arranged to make contact with the inside of the flange member; and power means to move the hole piercing member axially through the sheet metal wall and to also move the bar and the pipe connection means in contact therewith, the collar and flange member of said pipe connection means being pressed outwardly by means of the conically-shaped free end portion of the bar to bend and grip the edge portion in the hole formed through the sheet metal wall.

3,942,241

SEMICONDUCTOR DEVICES AND METHODS OF MANUFACTURING SAME

Hiroshi Harigaya; Toshio Kano, and Eishi Aizawa, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Division of Ser. No. 309,857, Nov. 27, 1972, abandoned. This application Feb. 18, 1975, Ser. No. 550,396

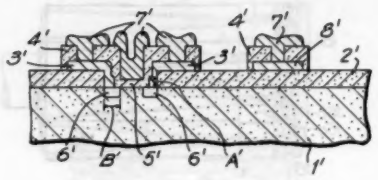
Claims priority, application Japan, Nov. 25, 1971, 46-94703

Int. Cl.² B01J *17/00*

U.S. Cl. 29—571 **18 Claims**

1. A method of forming an insulated gate type field-effect semiconductor device comprising forming a first insulating film on the surface of a silicon substrate; removing a region of said first insulating film corresponding to the source, drain and gate regions of the semiconductor device to be formed; forming a layer of polycrystal silicon doped with impurities having a type of conductivity opposite to that of said substrate on the exposed surface of said substrate and said first insulating film; forming a second insulating film on the surface of said poly-

crystal silicon; removing portions of said second insulating film and said polycrystal silicon at least in the region surrounding the region thereof adjacent the source, drain and gate regions of said substrate and in registration with the desired gate region of said substrate; forming a gate insulating film on the exposed surface of said substrate defining said gate region; forming said source and drain regions using said polycrystal



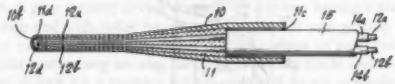
silicon layer as a diffusion source; forming apertures in said second insulating film providing access to the two portions of said polycrystal silicon layer associated respectively with said source and drain; and forming electro-conductive elements, one of said elements extending through each of said apertures in said second insulating film for respectively engaging each of said polycrystal silicon layer portions and a further of said elements engaging said gate insulating film.

3,942,242

THERMOCOUPLE STRUCTURE AND METHOD OF MANUFACTURING SAME

Silvio J. Rizzolo, Nutley, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Murray Hill, N.J.

Filed Aug. 22, 1973, Ser. No. 390,548
Int. Cl.² B01J 17/00
U.S. Cl. 29—573 8 Claims



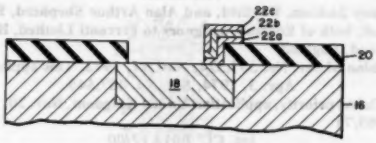
1. A method of preparing a thermocouple structure which comprises providing a length of a pair of thermocouple wires stripped of insulating material along a portion thereof, inserting the stripped portion of said pair of wires into corresponding perforations in a crushable mineral oxide preform having a length shorter than the length of the stripped portion of said pair of wires, inserting the resulting assembly into an open-ended metallic sheath, reducing the diameter of that portion of the metallic sheath enclosing said preform such that the diameter of said sheath at one end is smaller than the diameter of said sheath at the other end, the crushable mineral oxide preform as a result of said size reduction operation being crushed and compacted around and along the length of the stripped wires within the corresponding portion of said sheath having undergone size reduction, cutting the reduced one end of said sheath to expose the ends of said thermocouple wires, removing the crushed compacted mineral oxide material surrounding the exposed ends of said thermocouple wires, welding the ends of said thermocouple wires to form a thermocouple, applying ceramic cement to insulate said thermocouple from said sheath and closing the reduced one end of said sheath to enclose the resulting insulated thermocouple.

3,942,243

OHMIC CONTACT FOR SEMICONDUCTOR DEVICES

Roger W. Murray, Sunnyvale, Calif., assignor to Litronix, Inc., Cupertino, Calif.

Filed Jan. 25, 1974, Ser. No. 436,397
Int. Cl.² B01J 17/00
U.S. Cl. 29—590 8 Claims



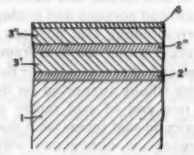
1. A method for forming an ohmic contact to the p-type region of an n-type GAsP LED having a dielectric layer on the upper surface thereof including an aperture exposing the surface of said p-type region comprising the steps of: applying at least two layers on at least a portion of said p-type region, each layer consisting of a member of the group consisting of aluminum and zinc, at least one of said layers being aluminum, at least another of said layers being zinc, and heating said LED at sufficient time and temperature conditions to render said zinc mobile in said aluminum.

3,942,244

SEMICONDUCTOR ELEMENT

Peter Flohrs, Altenfurt, and Horst Schafer, Wendelstein, both of Germany, assignors to Semikron Gesellschaft fur Gleichrichterbau und Elektronik m.b.H., Nuremburg, Germany

Division of Ser. No. 125,351, March 17, 1971, abandoned, which is a continuation of Ser. No. 778,735, Nov. 25, 1968, abandoned. This application May 24, 1974, Ser. No. 473,228
Claims priority, application Germany, Nov. 24, 1967, I614658
Int. Cl.² B01J 17/00
U.S. Cl. 29—590 12 Claims



1. A process for the preparation of a contact electrode for semiconductor devices, comprising the steps of forming a layered structure of a layer of a first contacting metal physically contacting a semiconductor surface and a layer of a ductile second contacting metal physically contacting the surface of the layer of the first contacting metal opposite that physically contacting the semiconductor surface, the first contacting metal being one which forms an alloy with the semiconductor, and subjecting said layered structure to a heat treatment during which liquid phases are simultaneously maintained at the border area between the semiconductor and the first contacting metal layer and at the border area between the first contacting metal layer and the second contacting metal layer, the thickness of the layer of the second contacting metal and the conditions of the heat treatment being chosen for retaining the ductility of a predominant portion of the second contacting metal layer, and the temperature of said heat treatment being below the eutectic temperature of the combination of semiconductor and second contacting metal but above the eutectic temperature of the two contacting

metals and the combination of semiconductor and first contacting metal.

3,942,245

RELATED TO THE MANUFACTURE OF LEAD FRAMES AND THE MOUNTING OF SEMICONDUCTOR DEVICES THEREON

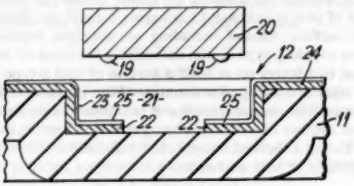
Sydney Jackson, Hayfield, and Alan Arthur Shepherd, Bramhall, both of England, assignors to Ferranti Limited, Hollinwood, England

Division of Ser. No. 307,374, Nov. 17, 1972. This application Apr. 3, 1974, Ser. No. 457,545

Claims priority, application United Kingdom, Nov. 20, 1971, 53985/71

Int. Cl.² B01J 17/00

U.S. Cl. 29—591 16 Claims



1. A method of manufacturing a lead frame comprising providing a plane metal sheet on an insulative substrate such that said lead frame is provided in a metal layer of a composite body comprising the metal layer on the insulating substrate forming a plurality of like matrices of conductors within said metal sheet and distributed along the horizontal axis thereof, deforming each matrix of conductors into cranked form by pressing a heated tool into the metal sheet at the center of the matrix of conductors to provide an open rectangular shape recess in the metal sheet by end portions extending in a first plane and forming the base of said recess, constituent conductors extending in a second plane and intermediate portions forming the sides of said recess, said sides being substantially at right angles to said end portions and joining said constituent conductors to corresponding end portions thereby forming said rectangular recess within the lead frame for providing a close fit with an associated semiconductor device, each matrix of conductors being wholly supported on the insulative strip which closes off one end of said recess and orientating a semiconductor device in said recess such that each contact of the device exclusively is contiguous with a cooperating cranked end portion of a conductor in the recess of the lead frame.

3,942,246

METHOD OF MAKING ARMATURE WINDINGS FOR COMMUTATOR TYPE DYNAMO-ELECTRIC MACHINES

Gerard Edward Wilding, 4 The Retreat, Englefield, Green, Surrey, England

Filed Apr. 12, 1974, Ser. No. 460,553

Int. Cl.² H02K 15/09

U.S. Cl. 29—597 4 Claims

1. A method of machine forming an electrical winding in situ on an armature of a commutator type dynamo-electric machine, the armature including a core slotted to receive and carry the winding, and a commutator having at a connection end thereof adjacent the core in each conducting bar a slot for receiving connections from the winding, and at a free end thereof remote from the connection end a shaft protruding centrally from the commutator,

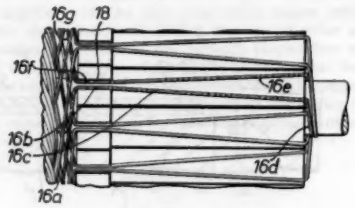
the method including after winding each coil of the electrical winding in situ in its core slots using a wire drawn continuously from a wire supply source the steps of:

a. carrying the wire circumferentially to a predetermined commutator bar,

b. there placing the wire in the slot of that commutator bar,

c. carrying the wire axially along a cylindrical surface of the commutator surface,

d. looping the wire around the shaft protruding from the free end of the commutator,



e. returning the wire axially along the said commutator surface to the said commutator bar slot, and

f. carrying the wire through that slot towards a predetermined armature slot in readiness for the commencement of winding the next coil of the electrical winding.

3,942,247

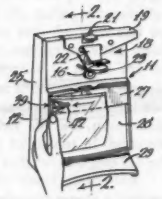
CAN OPENER WITH BAG OPENER ATTACHMENT

George Mark Ponczek, Chicago, and Herman Owen DeBoer, Jr., Wheaton, both of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Filed Aug. 2, 1974, Ser. No. 494,116

Int. Cl.² B67B 7/44; F16B 1/00

U.S. Cl. 30—6.5 4 Claims



1. The combination of a bag opener with a motor driven can opener, said can opener being of the type having a housing enclosing an electric motor which is drivingly connected to a can rotating means, and cutting means movably mounted on said housing for engagement with the top of a can being opened, said bag opener comprising a bag opener casing; an elongated cutting blade having a sharpened edge extending the length thereof and contained within said casing; latching means removably securing said bag opener casing to said can opener housing; means in said casing for retaining said cutting blade against lateral displacement; means on said housing adapted to abutt the edge of said cutting blade opposite said sharpened edge thereof when said casing is positioned on said housing; said casing being formed with an opening exposing a portion of said sharpened edge of said cutting blade whereby said exposed portion may be used for opening a bag; and an arm extending from said casing and spaced forwardly of said opening for protecting the user from the exposed portion of said cutting blade.

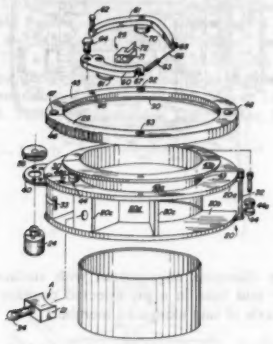
3,942,248
PIPE CUTTING DEVICE

C. Richard Sherer, Cypress, Tex., and Russell M. Foyle, Fairbanks, Alaska, assignors to DND Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 221,213, Jan. 27, 1972, Pat. No. 3,807,047. This application Apr. 29, 1974, Ser. No. 464,770

Int. Cl.² B23D 21/04; B26D 3/16

U.S. Cl. 30—97 9 Claims



1. A pipe cutting device comprising a frame which may be clamped around or inside a pipe, ring gear means freely mounted on said frame for rotating about said pipe, cutter means, means carried by said ring gear for selectively causing said cutter means to apply any suitable cutting force to said pipe responsive to a rotation of said ring gear relative to said pipe, means for driving said ring gear to cause said cutting force to girdle said pipe, means for advancing said cutter means into a deeper cutting relationship with said pipe, said advancing means comprising a wheel or roller riding on said pipe as said ring gear is driven, said wheel turning a train of gears for feeding said cutter means, and clutch means for selectively causing said feeding means to either raise or lower said cutting means.

9. A pipe cutting device comprising a frame having a groove on one end with roller bearings at the root of said groove, ring gear means mounted on said roller bearings in said groove, means comprising an arm carrying a cutting blade and a gear train driven by a register roller, said arm being pivotally attached at one end to said ring gear, means comprising said gear train mounted on the other end of said arm for applying any suitable predetermined cutting force to said pipe responsive to a rotation of said ring gear relative to said pipe with said roller riding on said pipe, and means for rotatably driving said ring gear to cause said gear train to drive said blade into said pipe responsive to said roller.

3,942,249
KNIFE

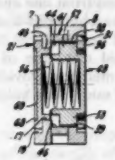
Paul W. Poehlmann, P. O. Box 445, Stinson Beach, Calif. 94970

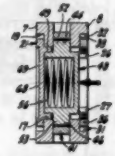
Filed Apr. 2, 1975, Ser. No. 564,315

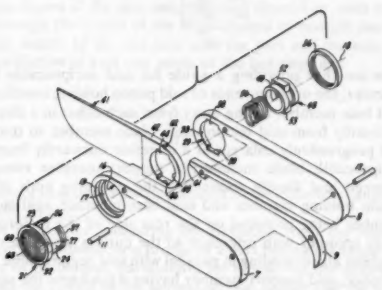
Int. Cl.² B26B 1/02, 1/04, 29/02

U.S. Cl. 30—160 14 Claims

1. A knife comprising a liner including a pair of parallel walls spaced apart along a transverse axis, means defining a pair of bearing surfaces in said walls and in alignment on said axis, a hub extending along said axis and abutting both of said bearing surfaces, a blade disposed between said walls, means defining a bearing surface in said blade and abutting said hub, means defining a first notch in said hub extending radially of said axis and extending axially the length of the hub between said bearing surfaces including at least partly through one of said walls, means defining a second notch in said one of said walls radially longer than said first notch and adapted to register radially of said axis with said first notch, means defining a third notch in said blade radially at least as long as said second notch and adapted to register radially of said axis with said first notch and said second notch, a detent, means for mounting said detent for axial movement relative to said hub, a key







projecting radially from said detent, riding in and projecting beyond said first notch and having a radial length to extend into each of said second and third notches, the portion of said key projecting beyond said first notch having an axial extent effective in a first axial position of said detent to lie wholly within said third notch, and means for resiliently urging said detent out of said first position and toward a second axial position with said portion of said key lying partly in said third notch and partly in said second notch.

3,942,250
ELECTRIC HAND NIBBLING MACHINE

Kiichiro Kurosaki, Tokyo, Japan, assignor to Sanwa Seiki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 16, 1974, Ser. No. 533,357

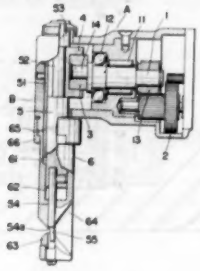
Claims priority, application Japan, Dec. 21, 1973, 48-145730

Int. Cl.² B26B 15/00

U.S. Cl. 30—241 4 Claims

1. A hand nibbling machine comprising: a casing; rotary driving means in said casing; a piston and means drivingly connecting said piston with said rotary driving means so that rotation of said rotary driving means effects reciprocation of said piston while permitting rotation of said piston about its longitudinal axis relative to said rotary driving means; a reciprocable blade member fixed to said piston and having a first cutting edge, said reciprocable blade member having a recessed portion for receiving therein the material to be cut with

said first cutting edge being provided at one of the ends of said recessed portion; means defining a fixed blade member having a second cutting edge disposed in abuttable relation to said first cutting edge; a piston holding member surrounding said piston for guiding movement of said piston, and means mounting said piston holding member and said reciprocable blade member for arcuate movement about the longitudinal axis of said piston relative to said casing; a base member having an end opposed to and spaced from one end of said piston holding member to define therebetween a slot for receiving the material to be cut, said reciprocable blade member being reciprocable through said slot, one of said piston holding member and said base member providing said fixed blade member and the other of said piston holding member and said



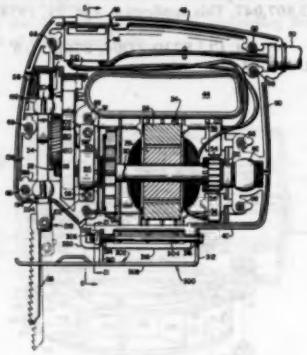
base member providing a guide for said reciprocable blade member, the opposing ends of said piston holding member and said base member flaring away from each other in a direction outwardly from said reciprocable blade member so that said slot progressively enlarges in a direction outwardly from said reciprocable blade member; a support member extending between and fixedly connecting the opposing ends of said piston holding member and said base member, said support member being provided on the rear side of the reciprocable blade member with reference to the cutting direction of the machine and extending in parallel with said reciprocable blade member, said support member having a thickness the same as or less than the thickness of said reciprocable blade member and having a sectoral shape diverging from adjacent said reciprocable blade member in the outward direction.

3,942,251
SABER SAW

David R. Griffies, Tarboro, N.C.; Russell O. Robison, and Robert W. Taylor, both of Jackson, Tenn., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 181,471, Sept. 17, 1971, Pat. No. 3,863,342. This application Oct. 7, 1974, Ser. No. 512,752
Int. Cl.² B27B *19/09*
U.S. Cl. 30—376 **3 Claims**

1. In a portable, power-operated sabre saw, a casing, drive means disposed in said casing for imparting alternate cutting and return strokes to a saw blade, a workpiece-engaging base formed separately of said housing and having a shoe portion that is adapted to engage a workpiece for guiding said casing over said workpiece, said base further including a pair of spaced apart ear portions projecting from said shoe portion and extending transversely of the direction in which said casing is moved to cause said blade to cut a kerf in said workpiece, said ear portions being rigid with said shoe portion and being formed with aligned apertures an elongated member extending through said apertures to support said base, said elongated member extending into and being carried by said casing transversely of said ear portions, said elongated member having an enlarged portion on one end and a threaded portion on the opposite end for engagement with a nut member, said nut member being trapped in said casing against rotation, wherein said nut and said enlarged portion on said elongated member are respectively engageable with oppositely facing surfaces of said ear portions to urge said ear

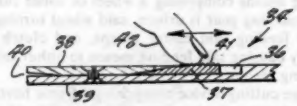


portions into clamping engagement with surfaces on said casing to fix said base in a pre-selected position about the longitudinal axis of said elongated member.

3,942,252
RULE PROTRACTOR

Daniel F. Roach, and George Spector, both of 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

Filed Aug. 26, 1974, Ser. No. 500,477
Int. Cl.² B43L *7/00*
U.S. Cl. 33—75 R **1 Claim**



1. A drafting quadrant comprising first and second similar flat arms, each arm having inner and outer parallel straight edges, said first arm having a circular lower disc at an outer end and said second arm having a similar upper disc at an outer end, wherein said discs are concentric and have opposing adjacent inner faces and spaced parallel outer faces forming coplanar extensions of said arms, said discs being axially secured together with a pivot pin to form a pivotable joint, including a nut threadedly mounted on said pin, and in abutment with the upper disc for locking purposes wherein the outer face of the upper disc is graduated in degrees with the 0 degree marking in alignment with the inner edge of the first said arm, said discs being one half the thickness of each arm and wherein each said outer edge is tangent to each disc whereby the periphery of the discs form a continuous smooth arcuate transition between the said outer edges, each arm including an arcuate guide offset from the inner face of each disc, wherein said guides slidingly abut the periphery of the adjacent disc for guiding pruposes, in further combination with a longitudinal sliding notch in the first said arm contiguous with the periphery of the upper disc including a wedge slidably mounted in said notch having a bevelled upper surface, said upper disc having a frustroconical inner surface complementary and opposite to said bevelled surface whereby movement of said wedge radially towards said upper disc causes said surface to abut said frustroconical surface of said

upper disc thereby jamming the discs frictionally against the wedge and the pivot pin further preventing relative rotation.

3,942,253

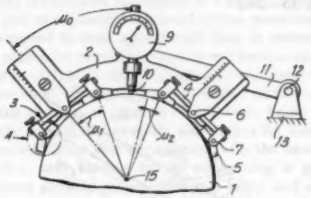
DEVICE FOR MEASURING DEVIATION OF THE NORMAL SECTION PROFILE OF A PART FROM THE ROUND SHAPE

Iosif Davydovich Gebel, Svetlanovsky prospekt, 35, kv. 94; Arkady Alexandrovich Zykov, prospekt Smirnova, 15, kv. 51; Askold Ivanovich Nefedov, Kolomyagi 2 Nikitinskaya ulitsa, 8, kv. 5; Viktor Ivanovich Parshikov, prospekt Karla Marxa, 70, kv. 93, and Viktor Fedorovich Khrolenko, Zvezdnaya ulitsa, 18, kv. 110, all of Leningrad, U.S.S.R.

Continuation of Ser. No. 234,602, March 14, 1972, abandoned. This application May 3, 1974, Ser. No. 466,889

Int. Cl.[2] G01B 5/20, 5/28

U.S. Cl. 33—178 D 2 Claims



1. A device for measuring the deviation from the round shape of a normal section profile of a part being measured, which has the shape of a body of revolution, comprising: a base; a dial indicator secured to said base and including a sensing element contacting the normal section profile; a support mounted on said base and consisting of self-adjusting balance beams mounted to pivot about respective axles of oscillation arranged in a plurality of support steps including first, subsequent and last steps, so that a pair of said beams forms said first step, the axles of oscillation in said first step are secured to said base, the axles of oscillation of said subsequent steps are secured to the respective ends of the beams of the preceding step, and the beams of said last step have areas for contacting the normal section profile of a normal section of the part in the course of its rotation; the disposition of the axles of oscillation of two beams of a subsequent step on a beam of the preceding step being determined by a central angle defined by radii drawn from the center of rotation of the part to one of the axles of oscillation of said beam of the preceding step and either of the axles of oscillation of the beams of the subsequent step installed thereon; the disposition of the areas adapted to contact the beams of said last step with the profile of the part being determined by central angles defined by radii drawn from said center of rotation of the part to the axle of oscillation of one of the beams of said last step and to the center of one said area; wherein said balance beams are symmetrical relative to planes drawn through their respective axles of oscillation and the center of rotation of the part, and said pairs of beams of the subsequent steps are symmetrical relative to planes drawn through the axles of oscillation of the beams of the respective preceding steps carrying said pairs of beams, and the center of rotation of the part, and said sensing element of the dial indicator contacts the profile of the part in a point on a straight line passing through the center of rotation of the part and parallel with the plane drawn through the axles of oscillation of the beams of said first step, the central angles being determined on the basis of the condition of minimizing the expression

$$P_{\mu n} = \begin{vmatrix} & \prod_{i=2}^{i=k} & \\ \cos n\mu_0 & & \cos n\mu_k \\ \cos \mu_0 & i=1 & \cos \mu_i \end{vmatrix}$$

wherein:

$P_{\mu n}$ is a value determining the amplitude of the harmonic n of displacement of the center of the profile in the direction of the straight line of the part;

n is a serial number of harmonics $n = 2; 3; 4; \ldots$;

μ_0 is a central angle defined by radii drawn from the center of the rotation of the part to the axle of oscillation of one of said beams of the first step and to the median of a segment interconnecting the axles of oscillation of the beams of said first step;

i is a serial number of the step of self-adjusting supports $1 \leqslant i \leqslant k$;

μ_i is a central angle defined by radii drawn through the axles of oscillation of one of the beams of the step i and one of the beams of the step $i+1$, mounted thereon or, with $i=k$, through the center of the area adapted to contact one of the beams of the last step with the part and the axle of oscillation of said one beam of the last step; and

$$\prod_{i=1}^{i=k}$$

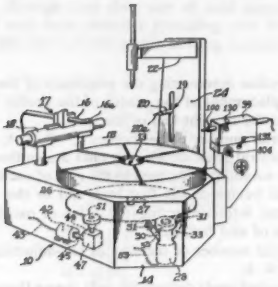
is a symbol that stands for the product of the cofactors ranging from $i=1$ to $i=k$.

2. A device for measuring the deviation from the round shape of a normal section profile of a part having the shape of a body of revolution, particularly for measuring the distance between the center of the normal section profile and the axis about which the part is mounted to rotate, comprising: a base; a dial indicator secured to said base and including a sensing element contacting the normal section profile of the part being measured; a support mounted on said base, said support consisting of self-adjusting balance beams, each mounted to pivot about an axle of oscillation arranged in a plurality of steps in such a manner that a pair of said beams forms a first step of said support, the axles of oscillation of said beams of the first step are secured to said base, the axles of oscillation of the beams that form subsequent steps of said support are secured to the respective ends of the beams of a preceding step, and the beams of a last step have areas for contacting the normal section profile of a normal section of the part in the course of the rotation; the disposition of the axles of oscillation of each of the two beams of a subsequent step on the associated beam of the preceding step being determined by a central angle defined by radii drawn from the center of rotation of the part to one of the axles of oscillation of one of said beams of the preceding step and either of the axles of oscillation of the beams of the subsequent step installed thereon; the disposition of the areas adapted to contact the beams of said last step with the profile of the part being determined by central angles defined by radii drawn from said center of rotation of the part to the axle of oscillation of one of the beams of said last step and to the center of one said area; wherein said base is suspended by a pantograph and is provided with a flat portion extending parallel to a plane drawn through the axles of oscillation of the beams of the first step; and further comprising an additional dial indicator including an additional sensing element that contacts said flat portion.

3,942,254
TRUE INDEX GEAR TOOTH SPACE CHECKING MACHINE

Richard Telman Thompson, Chicago, and David Lee Simpson, Elmwood Park, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed May 30, 1974, Ser. No. 474,736
Int. Cl.² G01B 5/20, 7/28
U.S. Cl. 33—179.5 R 2 Claims

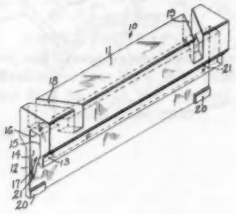


1. In an apparatus for recording in succession the deviation of a predetermined point of each of a series of teeth on a gear from a constant radius reference line comprising probe means for sensing said deviation of each of said gear teeth, sensing means mounted on said probe means and being movable with respect to said probe means upon contact with said teeth to provide an electrical signal that varies with said deviation of each of said teeth from said reference line, recording means responsive to said sensing means for recording each of said deviations, rotatable support means for said gear, support drive means for rotating said support means and said gear and endocer means driven by said drive means for providing electrical pulse signals representative of the amount of rotation of said support means and said gear between each successive predetermined point; the improvement comprising control circuity coupled to said encoder means for converting said electrical pulse signals to a repetitive succession of "forward" command signals and "backward" command signals that are precisely spaced in accordance with the number of teeth on said gear, probe drive means coupled to said digital processing means constructed to drive said probe means forward toward each of said gear teeth at said predetermined points upon the generation of a "forward" command signal and backward away from each of said gear teeth upon the generation of "backward" command signal, said probe drive means comprising a continuously rotating motor, an output shaft for said motor, a brake means coupled to said output shaft, a clutch means coupled to said output shaft, an eccentric coupled to said output shaft, an arm member connected between said eccentric and said probe means for driving of said probe means towards said gear during one-half revolution of said output shaft and said eccentric and for driving of said probe means away from said gear during the next one-half revolution of said output shaft and said eccentric, brake energization means and clutch energization means coupled to said control circuitry and constructed to respectively de-energize said brake means and to energize said clutch means in response to said "forward" and said "backward" command signals in order to achieve synchronization of said probe drive means with the rotation of said support means, forward limit switch means accuated by said probe drive means when said probe means is adjacent one of said predetermined points of said gear teeth for terminating the drive of said probe means toward said gear following the generation of "forward" command signal and prior to the generation of the next "backward" command signal and backward limit switch means accuated by a said probe drive means upon withdrawal of said probe means from the last contacted gear tooth by a predetermined amount following the generation of a "backward" command signal and prior to the generation of the next "forward" command signal wherein the actuation of one of said forward or of said backward limit switch means terminates each one-half revolution of said eccentric, wherein said probe drive means comprises a housing, a frame, stop means and a coiled spring wherein said housing is slideable in said frame and has a first cavity therein which receives said probe means and a second cavity therein adjacent to said first cavity which receives said coiled spring, said coiled spring being compressed when said probe means contacts said stop means such that said probe means stops at approximately the same position upon the contact of each gear tooth and such that the forward drive impact of said probe means is cushioned thereby.

3,942,255
CHAIN SAW FILING GUIDE

Andrew G. Bakoledis, 12 Reservoir Road, Clinton, Conn. 06413

Filed Apr. 1, 1974, Ser. No. 456,477
Int. Cl.² G01B 5/20; B23D 63/10
U.S. Cl. 33—202 4 Claims

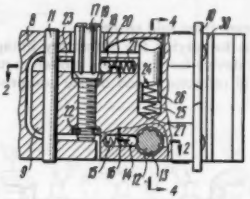


1. For use in combination with a chain saw which includes a bar with a chain movable about the periphery thereof and carrying successive cutting elements thereon, said cutting elements have an upper surface terminating in an angled cutting edge and a side edge, and a lateral dimension defined by the lateral extremities of said successive teeth which is greater than the thickness of said bar: an elongated one piece cutting element filing guide member of generally U-shaped cross-section having spaced apart legs having spaced apart essentially parallel inside walls and a bridging portion between said legs defining a continuous channel through said member, the bridging portion providing a surface to contact the upper surfaces of cutting elements, at least one passage defined through said bridging portion and said legs communicating with said channel whereby the edges of a cutting element can be exposed through said passage when said surface of said bridging portion rests on the upper surface of the cutting element whose edges are exposed, one of said legs being shorter than the other, said legs being so dimensioned such that said member may be positioned on a chain saw with the bar thereof between said legs and said bridging member on cutting elements with the longer of said legs held against the bar with one hand while the bar is engaged on the opposite side by the same hand below said shorter leg, further including projections integral with said legs extending from said inside walls of said legs and extending toward said channel and being adjacent the free ends thereof, wherein the distance between said integral projections measured essentially along a line perpendicular to said inside walls is less than the distance across the lateral exremities of two successive cutting elements on said chain.

3,942,256
AIMING DEVICE FOR MATCH WEAPONS

Efim Leontievich Khaidurov, ulitsa Glagoleva, 25, korpus 2, kv. 138, Moscow, and Vladimir Alexandrovich Razorenov, ulitsa Ponomareva, 4-a, kv. 51, Minsk, both of U.S.S.R.

Filed Mar. 8, 1974, Ser. No. 449,250
Int. Cl.² F41G *1/18, 1/10*
U.S. Cl. 33—257 **11 Claims**

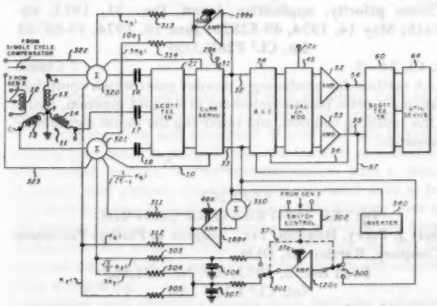


1. An aiming device for match weapons comprising: a base and a body, having a backsight, said body being mounted on said base by means permitting rotatable movement about a pivot axis and translatable movement in a direction parallel to said axis; a pair of adjustable threaded means mounted on said body and adapted to bear against said base in mutually perpendicular planes for providing vertical and horizontal corrections to said backsight in said rotatable and translatable directions of movement; the translatable direction of movement of said body and the axis of rotation of said body being perpendicular to the axis of the weapon; and means for biasing the pair of threaded means into engagement with the base of said aiming device; said biasing means comprising a generally hollow element slidably mounted in said body, and said element having an open end and a closed sloped end; a resilient element in said hollow element bearing against said body and the bottom of said hollow element, whereby said closed sloped end of said hollow element is pressed against a mutually cooperatively shaped associated wall surface of said base by the action of said resilient element.

3,942,257
INDEX ERROR CORRECTION FOR FLUX VALVE HEADING REPEATER SYSTEM

James R. Erspamer, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 2, 1974, Ser. No. 528,759
Int. Cl.² G01C *17/30*
U.S. Cl. 33—361 **10 Claims**



1. In a magnetic compass data transmission system for navigable craft having means responsive to the earth's magnetic field for generating first and second unidirectional output signals proportional to sin ψ and to cos ψ and substantially representative of said earth's magnetic field direction ψ with respect to said craft and substantially independent of the magnitude thereof, the combination for correcting craft index error angle comprising:

first time shared amplifier circuit means cyclically and alternately responsive to said signals proportional to sin ψ and cos ψ,

said time shared amplifier circuit means having an adjustable effective gain β representative of said craft index error angle and providing cyclic and alternate output signals proportional to β cos ψ and β sin ψ at a single output thereof,

second amplifier circuit means cyclically responsive for passing said cyclic and alternating signals proportional to β cos ψ and β sin ψ to separated first and second respective outputs thereof,

first summation means responsive to said second amplifier circuit means for forming a signal proportional to the difference between said signals proportional to sin ψ and β cos ψ and representing said data transmission system first unidirectional output signal corrected for the effect thereon of craft index error angle,

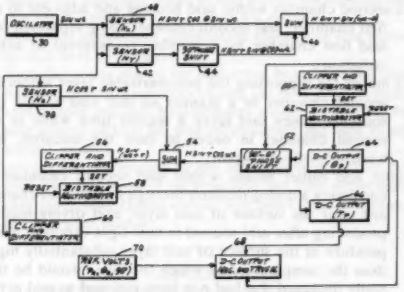
second summation means responsive to said second amplifier circuit means for forming a signal proportional to the sum of said signals proportional to cos ψ and β sin ψ and representing said data transmission system second unidirectional output signal corrected for the effect thereon of craft error angle, and

utilization means responsive to said first and second summation means.

3,942,258
EARTH REFERENCE THIN-FILM MAGNETOMETER COMPASS EXHIBITING TOTAL TILT IMMUNITY

Frank F. Stucki, Portola Valley, and James Herbert, Sunnyvale, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 21, 1974, Ser. No. 499,228
Int. Cl.² G01C *17/18*
U.S. Cl. 33—361 **8 Claims**



1. A thin-film magnetometer compass apparatus having total tilt immunity comprising in combination:

a plurality of thin-film magnetometer sensors arranged on a platform coordinate system in orthogonal relationship to each other, said plurality of thin-film magnetometer sensors are rigidly mounted with respect to said platform coordinate system, each of said plurality of thin-film magnetometers receiving an input signal, each of said plurality of thin-film magnetometer sensors providing an output signal respectively, said output signals having a varying amplitude, said amplitude varying as a function of the magnitude of the earth's magnetic field, and

means for computing the north vectors receiving each of said output signals and said input signal, said computing means processing said output signals with respect to each

other and with respect to said input signal to define platform angular deviation, said computing means providing a first and second DC voltage representing said platform angular deviation, said computing means comparing said first and second DC voltage with magnetic and true north reference voltages to provide the angular deviations with respect to magnetic and true north respectively.

3,942,259

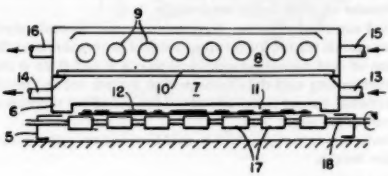
APPARATUS FOR DRYING PHOTOSENSITIVE SHEETS FOR THE PRODUCTION OF PRINTING PLATES

Siegfried Raiff, Weisenheim am Berg, and Werner Lenz, Ludwigshafen, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Sept. 26, 1973, Ser. No. 400,719

Int. Cl.² F26B *3/34*

U.S. Cl. 34—1 **8 Claims**



1. An apparatus for drying and curing a polymerizable layer in the production of a photopolymer printing plate which has been exposed through an image-bearing transparency to a source of actinic radiation in order to cure the exposed portions of the layer and which further has been washed by a solvent in order to remove the non-exposed, uncured portions of the layer, said apparatus comprising:

a housing;

a first chamber within said housing;

an actinic light source positioned within said first chamber;

a second chamber within said housing and adjacent to said first chamber, said second chamber being separated from said first chamber by a member transparent to actinic radiation;

a means for supporting the polymerizable layer within said second chamber in a manner so that said actinic light source exposes said layer a second time while in said second chamber in order to cure the uncured, non-washed portions thereof;

inlet and outlet means within said second chamber for conveying a drying medium through said second chamber and over the surface of said layer, said drying medium producing after said second actinic light exposure a temperature at the surface of said layer substantially higher than the temperature at which the layer would be thermally damaged if it had not been exposed to said actinic light source the second time.

3,942,260

METHOD AND APPARATUS FOR DRYING THE REFRACTORY LINING

Teruyuki Nishitani, Himeji, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Oct. 30, 1974, Ser. No. 519,232

Claims priority, application Japan, Oct. 31, 1973, 48-121682; Dec. 27, 1973, 48-192174

Int. Cl.² F26B *3/30*

U.S. Cl. 34—4 **10 Claims**

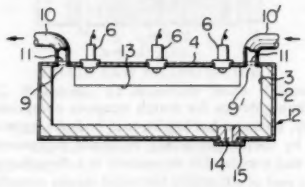
1. A method for drying the refractory lining of a ladle, tandish or like device for containing molten metal to remove water from said refractory, said device comprising an outer metallic shell and an inner lining of refractory material in said shell, said device enclosing a space for normally holding molten metal, said device having an open top, said method comprising:

positioning a metallic cover on top of said device to fully enclose the space therein and thereby constitute said space a cavity resonator,

supplying microwave energy to said cavity resonator to effect dielectric heating of said refractory material sufficient to cause evaporation of water therefrom as steam, and

removing steam from said space.

5. Apparatus for drying the refractory lining of a ladle, tandish or like device for containing molten metal to remove water from said refractory, said device comprising an outer



metallic shell and an inner lining of refractory material in said shell, said device enclosing a space for normally holding molten metal, said device having an open top, said apparatus comprising the combination with said device of

a metallic cover receivable on top of said device to fully enclose the space therein and thereby constitute said space a cavity resonator,

means for supplying microwave energy through said cover to said cavity resonator to effect dielectric heating of said refractory material sufficient to cause evaporation of water therefrom as steam, and

an exhaust conduit connected to said cover and communicating with said space through which steam can be removed from said space.

3,942,261

METHOD FOR PRODUCING POWDER PAINT

Isamu Hirata; Makoto Nishino, and Kazuhide Saigo, all of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1974, Ser. No. 535,907

Claims priority, application Japan, Dec. 21, 1973, 48-142416; May 14, 1974, 49-52826; June 18, 1974, 49-68743

Int. Cl.² F26B *5/06*

U.S. Cl. 34—5 **7 Claims**

1. A method for producing a powder paint which comprises dissolving a resin paint component in a liquid medium, freezing the resulting solution, and removing the liquid medium by sublimation.

3,942,262

DRYER TEMPERATURE CONTROL

Robert J. Perry, Houston, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

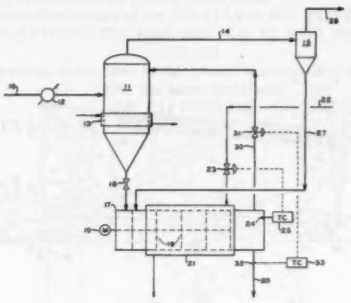
Filed Dec. 5, 1973, Ser. No. 421,863

Int. Cl.² F26B *5/04*

U.S. Cl. 34—15 **10 Claims**

1. A method of drying particulate material to remove volatile fluid therefrom comprising passing the material through a heated dryer, venting vaporized fluid from the dryer, measuring the temperature of the particulate material removed from the dryer, and controlling the rate at which the fluid is vented so as to maintain the measured temperature at a preselected

value, said fluid being vented at an increased rate when the measured temperature falls below a preselected value and



being vented at a decreased rate when the measured temperature rises above the preselected value.

3,942,263

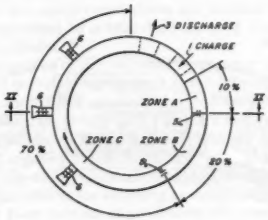
METHOD AND APPARATUS FOR COOLING OF HOT BULK MATERIALS

Hermann Müller, Frankfurt am Main, Germany, assignor to Dravo Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 417,262, Nov. 19, 1973, abandoned. This application Jan. 6, 1975, Ser. No. 538,526

Int. Cl.² G30B *3/30*

U.S. Cl. 34—20 **4 Claims**



1. In the process of cooling hot bulk materials such as sintered ore which is charged into gas-permeable cooling buckets at a charging zone and advanced in said buckets through a cooling zone and discharged from the buckets at a discharge zone, which buckets are in communication with a plenum chamber, said plenum chamber being provided with at least one throttling means disposed between the charging zone and the discharge zone, wherein cooling gas is forced via blower means into the plenum chamber and through the hot bulk material disposed in the gas-permeable buckets, the improvement comprising:

adjusting said throttling means such that the volume of cooling gas forced through the bulk material between the charging zone and the throttling means is less than the volume of cooling gas forced through the bulk material between the throttling means and the discharge zone, whereby the particulate emission from the bulk material is substantially reduced.

3,942,264

METHOD FOR THERMAL AFTERBURNING OF EXHAUST AIR FROM INDUSTRIAL WORKING PLANTS AND DEVICE FOR CARRYING OUT THIS METHOD

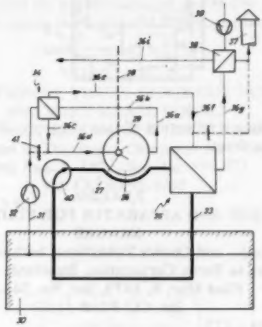
Kurt Zenkner, Hertzstrasse 10, Ettlingen, Germany

Filed Nov. 7, 1973, Ser. No. 413,595

Claims priority, application Germany, Nov. 9, 1972, 2254848

Int. Cl.² F26B *3/00, 5/00*

U.S. Cl. 34—35 **13 Claims**



2. In an industrial process plant having a chamber and a closed circuit of heated recirculating gas flow containing combustibles therein,

a. means for heating said recirculating gas flow including

b. a burner and

c. a heat exchanger connected to receive combustion gases from said burner,

d. means for withdrawing a portion of said recirculating gas flow from said closed circuit and delivering said withdrawn portion through said heat exchanger to said burner,

e. means for supplying a fuel to said burner for burning with the combustibles in said withdrawn portion,

f. means for conducting combustion gases from said burner to said heat exchanger,

g. heat-delivering means for delivering heat from the combustion gases to said recirculating gas flow in said circuit, said burner and said heat-delivery means comprising the sole source of heat for said recirculating gas flow in said circuit, and

h. means for discharging to the atmosphere a part of said withdrawn portion of recirculating gas flow while separate from said closed circuit and after passage thereof through said burner.

3,942,265

DRYER CONTROL ARRANGEMENT

Robert R. Sisler, and Robert C. Helfrich, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed May 9, 1974, Ser. No. 468,276

Int. Cl.² F26B *13/10*

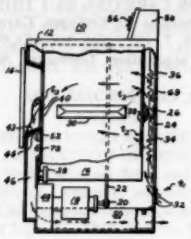
U.S. Cl. 34—45 **6 Claims**

1. In a clothes dryer providing at least one timer controlled operational cycle for the drying of clothes placed therein, a protective control arrangement comprising:

first and second heating means in the dryer, both energized at the start of the cycle for supplying thermal energy to the dryer for effecting drying of clothes placed in the dryer; and

control means in the dryer arranged such that, upon the reaching of a predetermined temperature therein, the control means will become activated to always effect de-energization of the first heating means for the remain-

der of the cycle while the second heating means remains continuously energized for the complete cycle, thereby



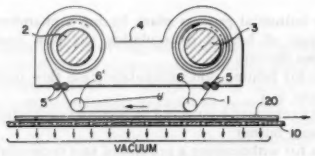
effecting a reduction of rate of supply of thermal energy to the dryer.

3,942,266

METHOD AND APPARATUS FOR FIXING TONER IMAGES

Satoru Honjo, and Osamu Fukushima, both of Tokyo, Japan, assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 5, 1973, Ser. No. 344,383
Int. Cl.² F26B *11/02*
U.S. Cl. 34—122 **4 Claims**



1. Apparatus for the solvent vapor fixing of toner images, comprisng a web formed of absorbent material, means for traversing said web over a predetermined path, means for locating a toner image in closely spaced juxtaposition to said web over a portion of said predetermined path, said web being prewetted with a volatile solvent for said toner, a first roll for storing a supply of said web material, a second roll for receiving said web material after traversing said path, means for guiding said web material over said portion of said predetermined path, and a housing containing said web material wet with solvent, said first and said second rolls being located within said housing, and said portion of said predetermined path being outside said housing whereby a toner image is fixed by solvent vapors emanating from said web material during the passage of the toner image past said portion of said web material path.

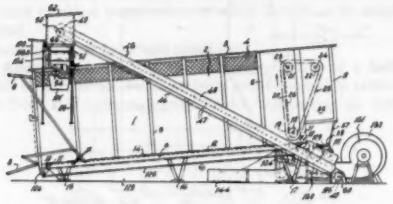
3,942,267

CROP TREATMENT DEVICES

Ary van der Lely, 10, Weverakade, Maasland, and Cornelis Johannes Gerardus Bom, 36, Esdoornlaan, Rozenburg, both of Netherlands

Filed May 28, 1974, Ser. No. 473,571
Claims priority, application Netherlands, May 28, 1973, 7307375
Int. Cl.² B65G *65/30*; F26B *15/18*
U.S. Cl. 34—236 **81 Claims**

1. A crop drier comprising a substantially enclosed drying chamber having an entrance, an exit and means for supplying heat to said chamber, a conveyor system comprising means in said chamber for moving crop in a first direction for moving crop along the length of said chamber and from said entrance to said exit, said system including movable conveyor means supported adjacent said entrance of said chamber, said conveyor said means being movable in a second direction transverse to said first direction relative to the width of said chamber at least in part within and in part outside said chamber proximate said entrance and being positioned to receive crop from another conveyor which is provided in said system sub-



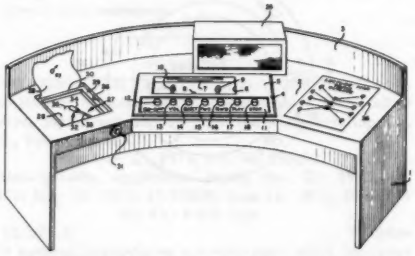
stantially out of and along the side of said chamber to carry crop from said exit to said conveyor means, driving means connected to said conveyor means to move same in a horizontal reciprocating movement transverse to said first direction and deposit crop therefrom uniformly throughout substantially the entire width of said chamber.

3,942,268

METHODS AND APPARATUS FOR INTERACTIVE COMMUNICATIONS

Stewart W. Wilson, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 2, 1972, Ser. No. 294,487
Int. Cl.² G09B *5/06*
U.S. Cl. 35—8 A **16 Claims**



1. A learning machine, comprising a first sound recording on which a lecture is recorded, a second sound recording on which a set of answers to questions that may be raised by the lecture is recorded, means for selectively reproducing the lecture and answers from the records in any desired sequence, and a map on which there is perceptibly recorded an outline of the lecture, a set of questions to which the answers have been recorded, and, for each such question, indicia indicating a primary relevance to a particular topic of the lecture and indicia enabling the user to locate the answer on said second record, said questions and said outline being simultaneously perceptible so that the possible relevance of all questions is suggested whether or not the lecture topic of primary relevance is then being reproduced.

3,942,269
AUDIO-VISUAL SYSTEM INCLUDING AUDIO-VISUAL SLIDES

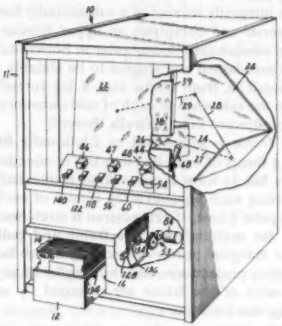
John L. Roche, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Continuation-in-part of Ser. No. 114,834, Feb. 12, 1971, Pat. No. 3,720,005. This application May 22, 1972, Ser. No. 255,450

The portion of the term of this patent subsequent to Mar. 13, 1990, has been disclaimed.

Int. Cl.² G09B 7/08

U.S. Cl. 35—9 A **17 Claims**



1. An audio-visual system wherein a plurality of audio-visual slides having correlated recorded audio and visual information and being removably located in a magazine are transported by positioning means within an audio-visual slide apparatus to present a given one of the audio-visual slides for providing correlated reproduced audio and projected visual information from said presented audio-visual slide,

wherein the audio-visual slides are located in a sequence corresponding to a branched learning format and each slide contains

a given number of predetermined response choices related to said correlated audio and visual information, and

a given number of projectable predetermined programs, each program individually relating a said response choice to a predetermined audio-visual slide having a predetermined location in said sequence;

wherein the audio-visual slide apparatus comprises

selection means for enabling an operator to select one of said given number of predetermined response choices,

projection means for projecting said given number of predetermined programs from said audio-visual slide,

sensing means responsive to the operation of the selection means for sensing the one of said projected predetermined programs which is related to said selected response choice, and

control means responsive to the operation of the selection means for controlling the positioning means in accordance with said sensed predetermined program to present said predetermined audio-visual slide related to said selected predetermined response choice;

wherein each of the projectable predetermined programs of a given audio-visual slide includes

first indicia providing a binary number for indicating the number of audio-visual slides in said sequence that said predetermined audio-visual slide related to said predetermined response choice by said program is located in the sequence from the given audio-visual slide; and

wherein the positioning means includes

a stepping means for incrementally stepping the magazine a number of steps corresponding to said number of audio-visual slides in said sequence that said predetermined audio-visual slide is located in the sequence from the presented given audio-visual slide,

characterized by the control means comprising

counting means for counting the number of steps stepped by the stepping means; and

a registering means for registering the binary number provided by the first indicia of said sensed predetermined programs; and

comparing and gating means for comparing the counted number of steps with the registered binary number and for enabling the stepping means to repetitively incrementally step until the number of steps counted by the counting means equals the registered binary number.

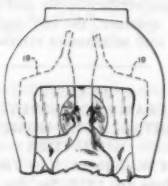
3,942,270
SIMULATION OF VISUAL BLACKOUT DUE TO AIRCRAFT MANEUVERING

Carl E. Hoyt, Vestal, and Timothy E. Hale, Kirkwood, both of N.Y., assignors to The Singer Company, New York, N.Y.

Filed Aug. 5, 1974, Ser. No. 494,871

Int. Cl.² G09B 9/08

U.S. Cl. 35—12 N **42 Claims**



1. Apparatus for simulating the progressive degradation of vision experienced by a person undergoing acceleration stresses, said apparatus comprising:

a. means for providing signals representative of selected acceleration forces;

b. optical means for selectably controlling the area of clear optical transmission therethrough, and being sensitive to variable excitation for varying the size of said area of clear optical transmission;

c. means responsive to said signals for providing said excitation to said optical means such that said area of clear light transmission therethrough is progressively decreased in response to first acceleration forces and progressively increased in response to second acceleration forces; and

d. means for mounting said optical means with respect to said person such that said person experiences a change in his field of view as said area of clear optical transmission changes.

3,942,271
BACKHOE ATTACHMENT

Anthony Joseph George, 2415 Nicholby Drive, Limestone Gardens, Wilmington, Del. 19808

Filed July 8, 1974, Ser. No. 486,362

Int. Cl.² E02F 3/76, 3/81; F16B 21/10

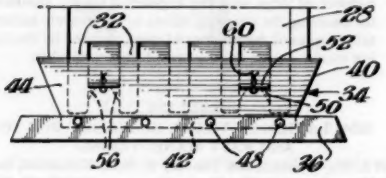
U.S. Cl. 37—117.5 **7 Claims**

1. An earth moving attachment and connection to an earth moving implement having teeth extending along substantially parallel longitudinal axes from the lower end of a bucket, said attachment and connection comprising:

a housing having a compartment with an opening and an enclosed end portion formed by two walls converging to form a blade attaching portion, said opening being of suitable size and shape to permit insertion of bucket teeth into said opening, said enclosed end portion of the compartment limiting the insertion of said teeth, and a blade secured to said blade attaching portion of said housing near the enclosed end portion of said compartment;

at least two retaining lugs each secured to adjacent sides of two adjacent longitudinally extending teeth and convergently tapered toward the bucket's lower end so that the rear ends of the lugs form an abutment in the open spacing between the adjacent teeth;

said housing having at least one aperture in a wall of said compartment for alignment with said abutment;



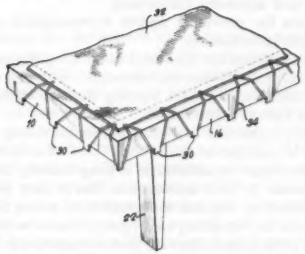
the attachment connection comprising a removable retaining bar passing through said compartment aperture and behind said abutment, and holding means to hold said bar substantially perpendicular to said abutment, and said compartment aperture, thereby preventing longitudinal movement of said attachment relative to said teeth.

3,942,272

MODULAR FRAME FOR STRETCHING SHEET MATERIAL SUITABLE FOR HOME USE IN HOBBY ACTIVITIES

John S. Doyel, 404 W. 20th St., New York, N.Y. 10011

Filed June 16, 1975, Ser. No. 587,280
Int. Cl.[2] D06C *3/08*
U.S. Cl. 38—102.91 **5 Claims**



1. A modular, collapsible and adjustable rectangular frame for stretching sheet material, as for rug-tufting by a hobbyist, comprising:

four substantially identical side bars extending along the sides of a horizontal rectangle, at least two substantially identical extension bars extending along at least two opposite sides of the rectangle, and four substantially identical legs extending downwardly from each of the sides of the rectangle, wherein:

each bar is integrally formed of a substantially homogeneous material and comprises: an elongated channel member which is substantially rectangular in a vertical section transverse to the length of the bar and is formed of a top and two side walls; a substantially shorter bottom wall at one longitudinal end of the channel member which forms, together with the adjacent portion of the top and side walls, a connecting tunnel which is open longitudinally outwardly; a connecting insert extending away from the channel member at the other longitudinal end thereof, said insert being shaped and dimensioned to be received in frictional fit in said connecting tunnel; a longitudinally extending row of spaced bracing walls each extending transversely of the top and side walls and being integral therewith; a selected pair of adjacent bracing walls forming, together with the portion of the top and side walls intermediate thereto, a leg tunnel which is substantially rectangular in horizontal section; the side wall facing away from the frame having at its lower portion a longitudinally extending row of web-engaging projections facing away therefrom, the connecting insert of each side bar extending transversely of the length of the channel member thereof and the connecting insert of each extension bar extending along the length of the channel member thereof; and

each leg is integrally formed of a substantially homogeneous material and comprises an upper tubular portion which is substantially rectangular in horizontal section and is dimensioned and shaped to be slidably received in frictional fit from below into a leg tunnel formed between the side walls of each of said channel members and two adjacent bracing walls thereof;

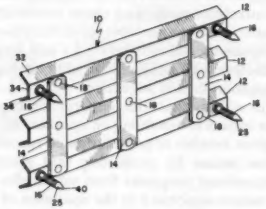
wherein the frame is assembled by frictionally fitting the connecting insert of each bar into the connecting tunnel of another bar to form a rectangular frame and by frictionally fitting each leg into a leg tunnel of each side of the rectangular frame, sheet material is stretched thereon by laying the material over the frame and pulling outwardly the marginal portion thereof by a web lacing said web-engaging projections, and the lengths of any pair of opposite sides of the frame are changed by adding or subtracting extension bars.

3,942,273

MILITARY RIBBON HOLDER

Thomas D. Adams, 1704 Keyline Drive, Lemon Grove, Calif. 92045

Continuation-in-part of Ser. No. 362,910, May 23, 1973, abandoned. This application Apr. 8, 1974, Ser. No. 459,121
Int. Cl.[2] A44C *3/00*
U.S. Cl. 40—1.5 **10 Claims**



1. A holder for supporting a display object on fabric comprising:

a display object,

a threaded pin having helical threads, said pin comprising an elongated threaded member secured to said display object and having a pointed terminal portion,

threaded nut means having helical threads for engagement with said threaded member and for engaging and compressing said fabric,

said threaded nut means is comprised of flexible plastic material,

the threads on said threaded pin having a depth less than one-half of the thread depth for said threaded nut means, and

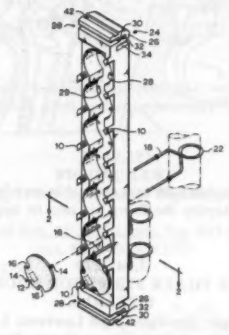
said threaded pin has a thread depth in the range of two thousandths to five thousandths of an inch.

3,942,274

STRIP MODULE FOR SIGN ELEMENT

Donald Winrow, Weston, Canada, assignor to Ferranti-Packard Limited, Toronto, Canada

Filed Apr. 15, 1974, Ser. No. 460,699
Int. Cl.² G09F 11/34
U.S. Cl. 40—28 C 5 Claims



1. An array of display elements wherein each element comprises:

a flat element, contrastingly coloured on opposite sides,

rotatably mountable on a base to rotate about an axis approximately parallel to the surface of the flat element,

a magnet mountable on said flat element, defining a magnetic polar axis transverse to said rotational axis,

a pair of pole pieces mounted on said base to project in such proximity to the locus of said magnet rotating on said element, that a magnetic field created by the pole pieces will affect the orientation of said magnet,

said pole pieces being selected of material whose magnetic polarity is reversible,

a magnetic element located rearwardly of said base joining said pole pieces in a magnetic circuit,

a single row of said bases being connected in longitudinally extending row corresponding to a row of elements in said array, to form strip modules,

said strip modules being designed and constructed to be coupled side by side in close proximity to form an array of said elements, the portion of the magnetic circuit rearward of the case is formed to provide, as viewed in the longitudinal extension direction of the element, spaced extents extending away from the base, crossing, then meeting to form a bight,

and first means for carrying an electric current pulse in one direction, said first means inserted between said spaced extents on one side of the crossing of said extents will create one magnetic polarity in said pole pieces and second current carrying means inserted between said spaced extents on the other side of the crossing of said extents will create the opposite magnetic polarity in said pole pieces,

said spaced extents being designed on either side of said crossing to receive at least one energizing current carrying means therebetween.

3,942,275

READING SCROLL MACHINE

Dennis W. Fasnacht, 504 E. Bowery St., Iowa City, Iowa 52240

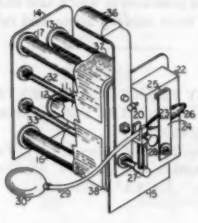
Filed Feb. 10, 1975, Ser. No. 548,282
Int. Cl.² G09J
U.S. Cl. 40—31 3 Claims

1. A reading scroll machine comprising:

first and second rollers, a book to be rolled like a scroll between said rollers,

a frame, said frame having supporting means for rotatively mounting said rollers and displaying a plane portion of said book that is unwound between said rollers, means for viewing said unwound portion from outside said frame,

an electric motor, means for rotatively coupling said motor to one of said rollers, a magnetic switch connected to said motor for controlling the operation thereof, an actuator for operating said switch comprising a leaf spring having a magnet on the free end thereof, said switch and said leaf spring being juxtaposed, said actuator being operable easily to change the distance between said magnet and



said magnetic switch for operating said switch between an off-position and an on-position,

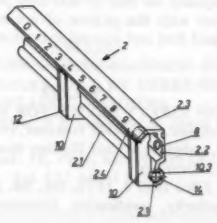
an enclosure with an exposed flexible membrane, mounting means for holding said enclosure adjacent said actuator and switch such that outward movement of said membrane operates said actuator and thereby operates said magnetic switch to said on-position, means for selectively filling said enclosure with air under low pressure, said enclosure while filled with air under pressure causing said membrane to press against said actuator for operating said switch to said on-position to cause said motor to operate, and the operation of said motor rotating said one of said rollers and thereby sequentially displaying different portions of said book.

3,942,276

CODING STRIP FOR GUIDING CONTAINERS

Manfred Sillmann, Emmendingen, Germany, assignor to Erwin Sick Optik-Elektronik, Waldkirch, Germany

Filed Sept. 13, 1974, Ser. No. 505,836
Claims priority, application Germany, Sept. 22, 1973, 7334447
Int. Cl.² B42F 21/00
U.S. Cl. 40—359 11 Claims



1. A coding strip which is one part of a coding device and which attaches to a transport container, said strip being code machine readable by another part of said coding device for guidance of said container to one of several possible destinations according to the code indicated, comprising:

support member means having first longitudinal member and having a portion remote from that member and parallel thereto defining a rail,

means for fixedly securing said support member means to said transport container,

slide member means mounted on said rail for movement thereon along said code bearing member for indicating machine readable codes by means of spaced locked positions therealong,

said support and slide member means having interfering portions for defining said locked positions to prevent relative movement therebetween when said member means are urged into a locked position, and

spring means disposed for engaging said support and slide member means and urging said member means into any of said locked positions in which said slide member means is prevented from moving along said rail.

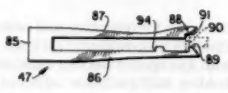
3,942,277
UNITARY FIRING PIN AND EXTRACTOR

Maxwell G. Atchisson, 55 Old Yellow Springs Road, Apt. H, Fairborn, Ohio 45324

Division of Ser. No. 250,006, May 3, 1972, Pat. No. 3,850,076. This application Feb. 1, 1974, Ser. No. 438,568

Int. Cl.² F41D *11/16*

U.S. Cl. 42—25 **7 Claims**



1. A firing pin for use in a firearm, comprising:

a flat unitary member including a base portion and a pair of arm portions extending from said base portion in generally parallel spaced apart relation to each other to terminate at respective ends spaced apart from said base portion;

said arm portions maintaining said ends spaced apart from each other a predetermined distance and being resiliently deformable with respect to each other to permit increase of said predetermined distance;

each of said spaced apart arm portions having an elongate inner surface facing in confronting relation toward the other of said arm portions, said elongate surfaces being mutually parallel to define a movement guide slot between said arm portions for the entire unitary firing pin;

first extractor member disposed at said end of one of said arm portions to engage the rim of a cartridge;

second extractor member disposed at said end of said other arm portion in spaced relation with said first extractor member to engage the rim of a cartridge disposed between said first and second extractor members; and

means disposed on one of said arm portions in operative alignment with the primer of a cartridge disposed between said first and second extractor members.

3,942,278
FIRING PIN SAFETY DEVICE FOR HAND FIREARMS

Bernhard Schaller, and Willi Volkmar, both of Ulm (Danube), Germany, assignors to Carl Walther Sportwaffenfabrik, Ulm (Danube), Germany

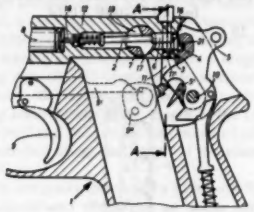
Filed Dec. 9, 1974, Ser. No. 531,152

Claims priority, application Germany, Dec. 15, 1973, 2362464

Int. Cl.² F41C *17/04*

U.S. Cl. 42—70 F **8 Claims**

1. In a firing pin safety device for hand firearms, a firing pin pivotable between lower and upper positions, a moveable member connected to said firing pin, a pivotally mounted hammer engageable with said firing pin in the upper position, means including a trigger for pivoting said hammer into the cocked position, and a release lever pivotable with said hammer and engageable with said moveable member to move said member and thereby the firing pin into its upper position.



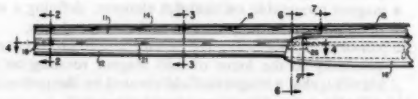
3,942,279
REMOVABLE FILLER STRIPS FOR DOUBLE BARREL FIREARMS

William B. Ruger, Southport, and Lawrence L. Larson, Bethany, both of Conn., assignors to Sturm, Ruger & Co. Inc., Southport, Conn.

Filed Oct. 29, 1974, Ser. No. 518,807

Int. Cl.² F41C *21/06, 21/08*

U.S. Cl. 42—76 R **8 Claims**



1. In a double barrel firearm having two generally parallel barrels spaced a pre-determined distance apart by a front spacer secured to the facing surfaces of said barrels at the forward ends thereof and by a rear spacer secured to the facing surfaces of said barrels toward the rearward ends thereof, the improvement which comprises a removable filler strip assembly for filling the space between the barrels from the rear spacer to the front spacer, said removable filler strip assembly comprising:

a pair of filler strips which extend along opposite sides of said barrels in the space between said barrels from the forward end of the rear spacer to the rearward end of the front spacer,

filler strip engaging means at the forward ends of said filler strips for releasably connecting said forward ends to the front spacer, and

filler strip retainer means removably secured to the rear spacer for releasably connecting the rearward ends of said filler strips to said rear spacer.

3,942,280
FISH LURE

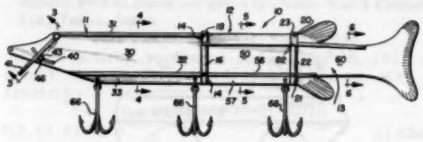
Francis E. Ryder, Barrington, and Michael D. Thomas, Elmhurst, both of Ill., assignors to Ryder International Corporation, Barrington, Ill.

Filed Nov. 22, 1974, Ser. No. 526,169

Int. Cl.² A01K *85/00*

U.S. Cl. 43—42.15 **12 Claims**

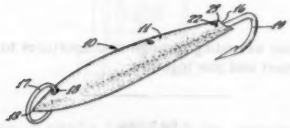
1. A fish lure, comprising head, body and tail portions in the general configuration of a bait fish, the improvement wherein, at least said body portion includes a web portion positioned along a vertical axis of the fish lure and extending along the length of said body portion, and flange means secured to said

web portion and extending in diametrically opposed directions from said web portion, whereby said web and flange portions

provide reduced cross-sectional area and weight to the fish lure while providing a full-bodied appearance for the fish lure.

3,942,281
FISHING LURE

Richard L. Hill, 11140 E. Imperial Highway, Norwalk, Calif. 90650

Filed Feb. 19, 1974, Ser. No. 443,448
Int. Cl.² A01K *85/00*
U.S. Cl. 43—42.39 **4 Claims**



1. A fishing lure comprising:
an elongate streamlined solid body molded of a large percentage of plastic and a large percentage of comminuted solid material intermixed with and uniformly distributed through the plastic in a proportion to impart to the body homogeneity and a specific gravity in the range of 1.4 to 2.1;
a facility for coupling the body to a line; and
at least one barbed hook attached to the body.

3,942,282
MINNOW HARNESS FOR FISHING

Clarence E. Flagel, 521 S. Bridge St., Markesan, Wis. 53946

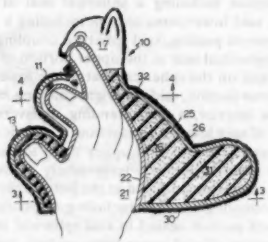
Filed Apr. 14, 1975, Ser. No. 567,904
Int. Cl.² A01K *83/06*
U.S. Cl. 43—44.2 **5 Claims**

1. A fishing device comprising a rigid shank portion,
an angularly related portion extending from said shank portion and adapted to support bait,
a flexible strand wrapped around and in frictional engagement with said shank portion and including means at one end of said shank portion for connection to a fishline and hook means at the other end adapted for connection to bait at a point remote from said shank portion and said strand having a strand portion in a first position non-parallel relative to said shank portion when said hook is connected to bait and said strand portion being displaceable from said first position to a second position generally parallel with said shank portion after a fish is caught and during fish retrieval.

3,942,283
HAND PUPPET

Mary P. Rushton, 320 W. Paces Ferry Road, NW., Atlanta, Ga. 30305

Filed Mar. 27, 1975, Ser. No. 562,845
Int. Cl.² A63H *3/14*
U.S. Cl. 46—154 **11 Claims**



1. A hand puppet shaped like and having the characteristics of a stuffed toy and being configured for manipulation by five fingers of a hand, comprisng:
a body portion defined by front, back and bottom surfaces;
a head projecting from said body portion at an end of said body portion opposite said bottom surface;
first and second pairs of appendages projecting from said body portion, wherein the first pair of appendages are disposed adjacent the bottom surface of the body portion and the second pair of appendages are disposed between the first pair and head;
a pocket extending in said body portion and terminating inside of said appendages and said head to form five depending recesses, each of which is adapted to receive a finger, said pocket being juxtaposed to the front of the body portion so that the palm of the hand is just behind the front surface of the body portion;
a cavity disposed between the pocket and the back of the body portion; and
stuffing means contained within said cavity for substantially maintaining the shape of at least said back of the body portion as the puppet is manipulated, said stuffing means having sufficient stiffness to maintain the stuffed toy shape of the hand puppet when a hand is not in the pocket and being so located that the hand puppet will rest on the bottom surface without falling over.

3,942,284
DOLL WITH SEVEN SPHERICAL TORSO JOINTS AND FIVE APPENDAGES HELD BY THREE-SECURED ELASTIC MEMBERS

Neal Kublan, Brooklyn, N.Y., assignor to Mego Corporation, New York, N.Y.

Filed Mar. 18, 1974, Ser. No. 451,827
Int. Cl.² A63H *3/20*
U.S. Cl. 46—161 **1 Claim**

1. A jointed doll comprising a body, said body including an upper torso section and a lower torso section, a head, a pair of legs moveably coupled to said upper torso section, a pair of arms moveably coupled to said upper torso section, said upper torso section including a first spherical seat and a second spherical seat, said first and second spherical seats spaced apart from each other and facing in opposite directions, one of said arms including a spherical surface positioned in said

first spherical seat in said upper torso section and said other arm including a spherical surface positioned in said second spherical seat in said upper torso section, a first pin located in the upper portion of one of said arms and a second pin located in the upper portion in the other of said arms, said first and second pins being parallel to each other, an opening extending through said first and second spherical surfaces and an opening extending through said first and second spherical seats, a resilient member secured to said first pin, passing through said openings in said first spherical seat and second spherical seat, passing through said openings in said first and second spherical surfaces and secured to said second pin to urge said first and second spherical surfaces to remain in said first and second spherical seats, a spherical coupling member, said upper torso section including a spherical seat at its bottommost portion, said lower torso section including a spherical seat at its uppermost portion, said spherical coupling member seated on said spherical seat at the upper portion of said lower torso section and on the spherical seat at the lower portion of said upper torso section, said spherical coupling member including a hollow interior, a pin extending transversely through the interior of said lower torso section, a spherical seat located at the upper portion of said upper torso section, said head including a pin extending transversely through the interior thereof, an opening defined at the bottom portion of the head, a head coupling member including a spherical surface at its lowermost portion seated in said spherical seat at the uppermost portion of said upper torso section, said head coupling member including a groove that receives the bottom portion of said head which defines said head portion opening, said head coupling member including material above and below said groove which abuts said bottom portion of said head, said head coupling member being hollow, an elastic member secured to said pin in the interior of said head, extending through said head coupling member, through said upper torso section, through said spherical coupling member and secured to said pin in said lower torso section, said lower torso section including first and second spherical seats, each leg including a spherical surface at its uppermost portion, a pin located in the upper portion of each leg, an opening extending through the spherical surface of each leg, the pins in the upper portions of said legs being parallel to each other, the spherical surface of each leg being seated in a respective spherical seat of the lower torso section, an elastic member secured to the pins in the upper portions of said legs and extending through the spherical surface of each leg and through the lower torso section.

3,942,285

MINIATURE TOY VEHICLE CONSTRUCTION

Bernard J. Dehner, Mound, Minn., assignor to Tonka Corporation, Hopkins, Minn.

Filed Jan. 6, 1975, Ser. No. 538,756

Int. Cl.[2] A63H *17/05*

U.S. Cl. 46—201 **3 Claims**

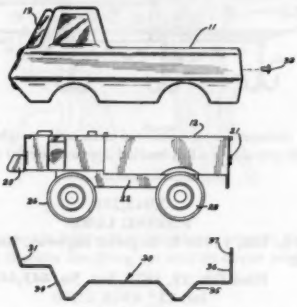
1. In a miniature toy vehicle,

a. a vehicle body shell having a front wall with a grille opening and a rear wall with an aperture therein,

b. a body insert having a projection at one end fitting in the grille opening, an aperture at its other end and slots on its underside for receiving a wheel axle,

c. a wheel carrying axle disposed in said slots,

d. a pan extending along the underside of the insert to prohibit removal of the axle from the insert slots and having a hook means at one end engaging over the projection and an aperture at its other end aligned with the apertures in the insert and shell when the members are assembled, and



e. a fastener extending through said apertures to lock the shell, insert and pan together.

3,942,286

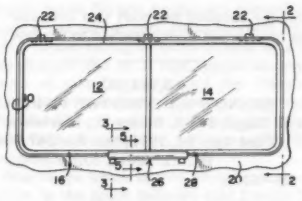
HINGED WINDOW WITH QUICK RELEASE BAR

Yale W. Ehret, and Robert A. Frey, both of Elkhart, Ind., assignors to The Adams & Westlake Company, Elkhart, Ind.

Filed Sept. 16, 1974, Ser. No. 505,968

Int. Cl.[2] E05B *65/10*

U.S. Cl. 49—141 **6 Claims**

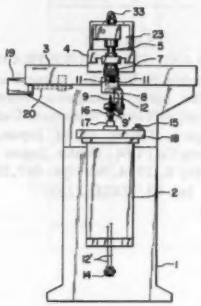


1. A window construction which comprises a sash which includes a generally rectangular glass panel supporting sash frame of a size for closing an opening in a generally vertical wall, means at the one side of said opening mounting said sash frame for swinging movement in a direction outwardly of said opening, and a latch assembly for releasably holding the sash in the opening when the sash is in a closed position, which latch assembly includes a keeper member mounted adjacent the edge of the opening which is opposite said sash mounting means, said keeper member being in the form of an elongate plate member with a bead forming top edge portion extending along the inside edge of said opening and inwardly of said opening, and an elongate latch engaging and release bar which is pivotally mounted on the edge of said sash frame and which has on its bottom face surface portions positioned for engaging said bead edge portion of said keeper member whereby upon closing said sash said release bar is accessible for manual operation on the inside of said wall and may be swung to engage said bead edge portion and draw said sash into tight engagement in said opening.

3,942,287
CONTOUR GRINDERS

Yoshio Tokunaga, Higashikurume, and Keizo Shinano, Mitaka, both of Japan, assignors to Citizen Watch Company, Ltd., Tokyo, Japan

Filed Oct. 7, 1974, Ser. No. 512,930
Claims priority, application Japan, Nov. 10, 1973, 48-125911; Nov. 10, 1973, 48-129451[U]; Oct. 10, 1973, 48-129452[U]
Int. Cl.² B24B 17/00, 49/10
U.S. Cl. 51—5 D 11 Claims



1. A contour grinder for grinding the contour of a workpiece into a desired shape with a grinding wheel having an arched surface on the periphery thereof, said grinder comprising:

a rotatable substantially horizontally extending shaft,

a grinding wheel having an arched surface on the periphery thereof, said grinding wheel being fixed to said shaft,

a substantially vertically extending shaft,

means for rotating said substantially vertically extending shaft on its substantially vertically extending axis, said means comprising a motor driven and controlled by numerical control means,

means for moving said substantially vertically extending shaft longitudinally and laterally, said moving means comprising motors driven and controlled by numerical control means,

means connecting said substantially horizontally extending shaft to said substantially vertically extending shaft at a substantially right angle thereto for aligning the center of the arched surface on the periphery of the grinding wheel with the center of the substantially vertically extending shaft,

a substantially vertically slidable member on which a workpiece to be ground by the grinding wheel is mounted, and

means for substantially vertically reciporcatingly moving said vertically slidable member.

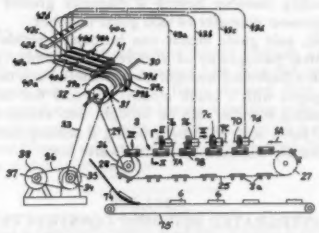
3,942,288
SYSTEM FOR SHAPING AND FINISHING WOOD CHAIR SEATS

Erich Schmidt, Vienna, Austria, assignor to Maschinenfabrik Zuckermann Komm.Ges., Vienna, Austria

Filed June 26, 1973, Ser. No. 373,873
Claims priority, application Austria, June 27, 1972, 5528/72
Int. Cl.² B24B 7/28, 17/02
U.S. Cl. 51—76 R 3 Claims

1. An apparatus for finishing generally flat contoured workpieces such as chair seats comprising:

conveyor means for displacing a succession of said workpieces in a transport direction at a uniform transport speed past a succession of finishing stations and including a plurality of holding means each for clamping a respective workpiece with the grain direction thereof substantially perpendicular to said transport direction; a succession of tools each at a respective station and each having a respective support wheel rotatable about an axis generally parallel to said transport direction and having an inwardly deflectable periphery carrying an abrasive surface having a width perpendicular to said transport direction and engageable with a respective zone of the respective workpiece narrower than the width of said workpieces transverse to said transport direction, the axes of said tools being parallel and the regions of attack of each surface upon said workpiece being offset from each other transverse to said transport direction with adjacent regions overlapping; and

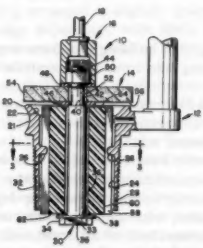


means for displacing each surface in a direction generally perpendicular to said transport direction at a speed equal to between 100 and 200 times greater than the travel speed of said workpiece, each tool including a support displaceable toward and away from said workpiece and a sandpaper belt spanned over each support, said belt having said abrasive surface, means for displacing said support toward and away from said workpiece according to a predetermined program, said means for displacing said support including a rotatable cam, a cam follower engaging said cam, and force-transmitting means between said follower and said support.

3,942,289
FLUSH TANK VALVE SEAT REFACER

Lucian F Greer, P.O. Box 5461, Midland, Tex. 79701

Filed Dec. 23, 1974, Ser. No. 535,977
Int. Cl.² B24B 15/02
U.S. Cl. 51—241 VS 10 Claims



1. A flush tank valve seat refacer tool for refacing a valve seat of a flush tank valve assembly comprising:

a stationary guide member in the form of an elongated cylinder having an axial bore formed therethrough, and a radial groove formed in an outer marginal wall portion thereof for removably engaging the interior of a flush valve assembly;

a mandrel having a marginal length thereof received within said axial bore; said mandrel having spaced apart abut-

ment means formed thereon which rotatably captures said guide means therebetween;

a grinding member having a central aperture and a horizontal disposed flat face which is normally disposed with respect to said mandrel; a marginal length of said mandrel being in the form of a bolt, said bolt portion of said mandrel being received through said cental aperture of said grinding member; fastener means by which the last said member is attached to the mandrel in overlying relationship respective to said guide means; said mandrel having means thereon for rotating said grinding members respective to said guide means;

said groove being diposed parallel to said mandrel and arranged to engage an indexing protrusion which may be formed within an axial bore of a valve assembly, said grinding member having a diameter greater than the outermost diameter of said guide member;

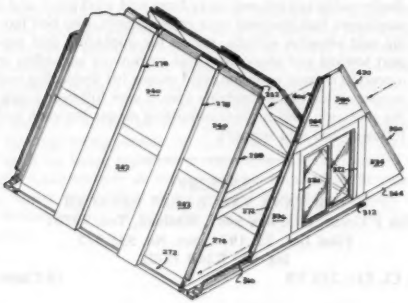
so that, said guide means can be placed within the axial central passageway of a valve seat assembly associated with a flush tank assembly, said mandrel can be rotatably engaged with a crank means, and said flat face of said grinding member can be brought into engagement with the valve seat, thereby grinding a seating face onto an upwardly disposed part of the valve seat.

3,942,290

INTEGRATED BUILDING CONSTRUCTION

John H. O'Sheeran, Box 178 c/o Milwaukee Shell Corporation, Plum City, Wis. 54761

Filed Jan. 3, 1975, Ser. No. 538,257
Int. Cl.² E04B 7/02
U.S. Cl. 52—57 **11 Claims**



1. An integrated building structure comprising:

a floor having side connection systems and end connection systems;

end walls with base connection systems interengaged with the end connection systems of the floor, the end walls having corner connectors;

side walls with base connection systems interengaged with the side connection systems of the floor, the side walls having corner connectors and having top connectors;

corner beams, with corner connectors mating with the corner connectors of adjacent side and end walls and interengaged therewith, the corner beams having top connectors;

an elongated main ridge pole having ridge pole connectors which interfit with the top connectors of the side walls and corner beams;

each of the adjacent connectors including a male connector portion and a female connector portion;

each of said male connector portions including a base with extending side walls, abutment flanges on the side walls, converging slant walls, wall sections with a plurality of outward protrusions, and an end wall;

each of said female connector portions being slidably engaged with an adjacent male connector portion, and comprising an inside end wall, substantially parallel side walls, outer end walls, substantially parallel inward walls, slant walls, wall sections with a plurality of depressed sections thereon, and a terminal wall;

the outward protrusions of the male connectors fitting within the depressed sections of the female connectors to interlock the connectors to one another; and

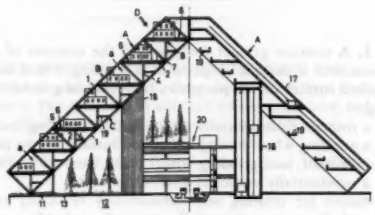
corner plugs interengaging the side and end walls with the floor.

3,942,291

ARTIFICIAL LAND STRUCTURE FRAMEWORK

Yasuhiro Hirata; Shoichi Kobayashi; Nobuo Yamaguchi, all of Tokyo; Katshuhiko Saito, Kanagawa; Mamoru Kimura; Yoshitel Iwasa, both of Tokyo; Masatoshi Ueda, Kanagawa, and Hideki Magara, Tokyo, all of Japan, assignors to Takenaka Komuten Co., Ltd., Osaka, Japan

Filed May 6, 1974, Ser. No. 467,209
Int. Cl.² E02D 27/00
U.S. Cl. 52—169 R **6 Claims**



1. A massive polyhedral framework for supporting artificial lands and buildings comprising:

standardized main beam members;

auxiliary beam members;

land beam members;

reinforcing beam members;

artificial land surface materials;

connecting means for releasably connecting said beam members together;

upper and lower grids formed by connecting said main beam members through said connecting means in the longitudinal and lateral directions at intervals of a predetermined span, said upper and lower grids being connected by said auxiliary beam members through said connecting means to form a number of three-dimensional spaces continuously disposed two-dimensionally, said two land beam members being provided along the diagonal lines extending through said three-dimensional spaces, the intersecting points of said land beam members being connected to the joints of said main and auxiliary beam members through said reinforcing beam members, said land surface materials being provided on said land beam members to form said artificial lands dividing said spaces in two, said artificial lands being disposed stepwise; and

tie members for connecting a plurality of said upper and lower grids together to form the polyhedral framework provided with said stepwise-disposed artificial lands, and

wherein a plurality of said upper and lower grids are connected in a gabled style by said tie members.

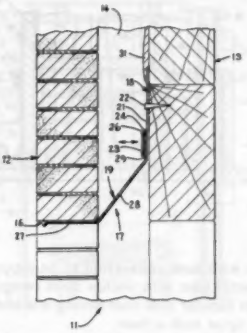
3,942,292
LINTEL FOR DOUBLE-SKIN WALL

Brian Robinson, Rogerstone, Wales, assignor to Catnic Components Limited, Caerphilly, Wales

Continuation-in-part of Ser. No. 250,951, May 8, 1972, abandoned. This application Dec. 26, 1973, Ser. No. 428,000

Int. Cl.² E06B 1/04

U.S. Cl. 52—204 **3 Claims**



1. In a load-carrying lintel for use in a vertical wall having spaced and substantially parallel inner and outer vertical skins defining a cavity therebetween, said lintel comprising:

a first lintel member adapted to be fixedly connected to said inner skin;

a second lintel member adapted to be fixedly connected to said outer skin at an elevation below said first lintel member;

said second lintel member including a plate portion disposed within and substantially spanning said cavity and being inclined upwardly and inwardly from said outer skin toward said inner skin; and

means coacting between said plate portion and said first lintel member (1) for preventing moisture from passing therebetween into the space below said plate portion and (2) for permitting relative movement between said inner and outer skins in a horizontal direction toward or away from one another;

said coacting means includes a first platelike flange fixedly connected to said first lintel member and projecting downwardly therefrom, said first platelike flange being spaced a substantial distance from the adjacent surface of said inner skin to define a downwardly opening slotlike recess therebetween, said coacting means further including a second platelike flange fixedly secured to said plate portion adjacent the upper edge thereof, said second platelike flange projecting upwardly from said plate portion and extending a substantial distance into said slotlike recess so that said first and second platelike flanges substantially overlap, said second platelike flange having a thickness substantially less than the width of said recess as defined between said first platelike flange and the adjacent wall of said inner skin;

said first lintel member having a substantially Z-shaped cross section and including first and second platelike portions disposed in substantially parallel and laterally spaced relationship and interconnected by an intermediate connecting portion, said first platelike portion being fixedly secured to the surface of said inner skin, said second platelike portion being spaced downwardly from said first platelike portion and spaced outwardly from the adjacent surface of said inner skin, said second platelike portion constituting said first platelike flange;

said second lintel member including a substantially horizontal load-carrying plate fixedly connected to said inclined plate portion adjacent the lower edge thereof, said horizontal plate being adapted to be embedded within said outer skin, and said second platelike flange being fixedly connected to the upper edge of said inclined plate portion and extending substantially vertically upwardly therefrom so as to project into said downwardly opening slotlike recess.

3,942,293
METAL OXIDE COATED REFRACTORY BRICK

Richard S. Cook, New Martinsville, W. Va., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 182,138, Sept. 20, 1971, Pat. No. 3,813,225, which is a division of Ser. No. 805,822, March 10, 1969, abandoned. This application Mar. 15, 1973, Ser. No. 341,418

Int. Cl.² B01J 1/20

U.S. Cl. 52—232 **4 Claims**

1. A dry assembly of refractory bricks wherein joints between individual bricks are grouted with material consisting essentially of substantially dry, finely divided, free flowing refractory metal oxide powder having a melting point greater than the temperature to which the refractory brick is exposed, the exposed faces of said grouting consisting essentially of said refractory metal oxide powder.

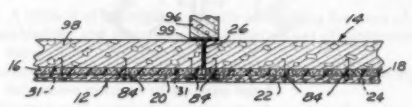
3,942,294
BUILDING CONSTRUCTION HAVING PANELS FORMED OF CONTACTING LAYERS WITH CAST-IN-SITU MATERIAL AT THE PANEL JUNCTURES

Jesse J. Savell, Jr., 1645 Alston Ave., Colton, Calif. 92324

Filed Dec. 26, 1973, Ser. No. 428,401

Int. Cl.² E04B 2/04, 1/74, 1/41

U.S. Cl. 52—259 **6 Claims**



1. A structure comprising an exterior wall shell encircling an interior area, which wall shell cooperates with roof and foundation means to form a building:

a. said exterior wall shell being formed from precast wall panels, each panel comprising an inner slab of reinforced concrete constituting the main or structural part of the panel and a layer of compressive, insulative material adherent to the outer face of said slab;

b. said panels being arranged in slightly spaced apart side-edge to side-edge adjacency, with their concrete slab portions facing toward said interior area, to form said exterior wall shell;

c. said exterior wall shell having a continuous layer or reinforced surfacing material adherent to the layers of compressive, insulative material on the concrete slab portions of said panels, which continuous layer forms a continuous integral outer skin from panel to panel on said shell;

d. the layers of compressive, insulative material adherent to the concrete slab portions of said panels cooperating to form a cocoon around said slab portions and thereby insulate the latter against ambient temperature extremes and act as a shock absorbing cushion between said slab portions and said layer of reinforced surfacing material to protect the latter against damage from any movements of said concrete slab portions in the exterior wall shell of said structure;

e. said exterior wall shell having no connecting means between the inner slabs of said wall panels which prevent relative movement therebetween during conditions of use, and said structure including cooperating fastening means for interconnecting said wall panels and said roof and foundation means;

f. said cooperating fastening means being attached to said panels only at their inner slab portions and being adaptable to permit sufficient movement of the wall panels relative to said roof and foundation means whereby each panel is mechanically insulated from its adjacent structural environment to the extent that stress interaction between the panel and said environment, as a result of the influence of ambient and environmental conditions on the structure, is substantially avoided, and physical deterioration of the exterior wall shell of the sort brought about by such stress interaction between precast concrete wall panels, and between said panels and their adjacent structural enviroment, in a conventional building with precast concrete panel walls is substantially obviated.

3,942,295

BASEBOARD ASSEMBLY

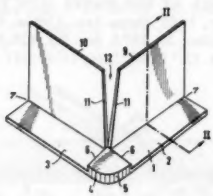
Peter Schacht, Miesenbacherstrasse 69, 8222 Ruhpolding, Germany

Filed Mar. 26, 1974, Ser. No. 454,818

Claims priority, application Germany, Mar. 27, 1973, 2315281

Int. Cl.² F04B 1/00

U.S. Cl. 52—288 35 Claims



1. In a baseboard arrangement, a synthetic plastic fairing unit for use in conjunction with a synthetic plastic baseboard member of the type comprised of a flat foot portion adapted to lie flat against a floor surface and a vertical wall-facing portion adapted to lie flat against the meeting wall surfaces of a projecting corner and slitted all the way through along the flat foot portion in direction transverse to the elongation of the baseboard member so that the baseboard member at the region of such slit can be bent around such projecting corner thereby causing the slit to spread and form a larger corner gap, the fairing unit comprising two flat leg portions adapted to lie flat against a floor surface along the meeting walls of a projecting corner underneath part of the foot portion of the baseboard member and enclosing between themselves a substantially right angle, a raised corner portion adapted to fill the corner gap in the bent baseboard member, and at least one vertical wall-facing portion adapted to lie flat against at least one of the meeting wall surfaces of a projecting corner behind part of the vertical wall-facing portion of the baseboard member and being connected to at least one of said leg portions along the inner edge portion of such leg portion. adapted to lie flat against a floor surface and a vertical wall-facing portion adapted to lie flat against the meeting wall surfaces of a projecting corner, the flat foot portion being slitted all the way through in direction transverse to the elongation of the baseboard member, the slit terminating at the vertical wall-facing portion of the baseboard member, and the baseboard member being bent at the region of said slit with said slit spread out to form a larger corner gap filled in by said raised corner portion of said fairing unit.

3,942,296

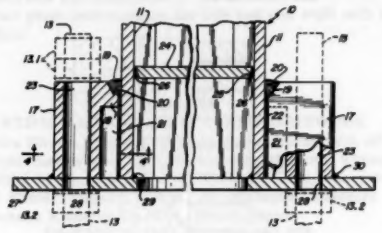
TUBULAR POLE WITH BASE CONNECTION

Roy Edwin Meyer, Red Wing, Minn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 7, 1974, Ser. No. 512,559

Int. Cl.² E02D 27/42

U.S. Cl. 52—296 11 Claims



1. A pole with base connection to be supported on a concrete and metal base with anchor bolts comprising:

an upright tubular pole wall having a lower end to be supported upon such a base;

a plurality of elongate upright connector bodies in spaced and side by side relation to each other and lying against the exterior of the pole wall adjacent the bottom of the pole, each of said bodies having a substantially retangular block-like configuration with the top surface thereof being spaced above the lower edge of the pole wall and with the bottom surface disposed adjacent the lower edge of the pole wall, each of the bodies having a structural connecting flange projecting horizontally to the pole wall at the top surface of the body, each of the bodies having an upright anchor bolt receiving hole entirely therethrough and through the top and bottom surfaces thereof and the structural flange of each connector body being affixed to the pole wall by a main structural weld therebetween and extending across the top of the flange; and

a diaphragm within the tubular pole wall and oriented transversely of the pole wall, the diaphragm conforming to the shape of the interior periphery of the tubular pole wall and being affixed to the pole wall, the diaphragm being disposed opposite the tops of the connector bodies and the structural welds and distributing transverse compressive and tensile loading among several of the connector bodies.

3,942,297

FRAMEWORK FOR HOUSING AUTOMOBILES OR THE LIKE

Isoichi Kitagawa, Yokohama, Japan, assignor to Hokuzen Shokai Co., Ltd., Yokohama, Japan

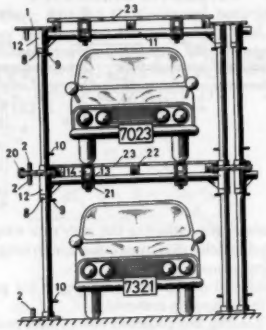
Filed May 1, 1974, Ser. No. 465,791

Int. Cl.² F04H 12/00

U.S. Cl. 52—637 3 Claims

1. A framework for supporting automobiles and the like comprising elongated vertical support members spaced from one another, interconnecting means received on the longitudinal ends of said vertical support members, said interconnecting means comprising a flat base plate and two cylindrical pipe elements extending from said flat base plate, said two cylindrical pipe elements having axes disposed perpendicular to said base plate, said two cylindrical pipe elements being spaced from one another, a vertical plate secured to said base plate between said spaced cylindrical pipe elements, elongated horizontal support members extending between said interconnecting means, said horizontal support members having cylindrical portions on their longitudinal ends thereof with the axes of said cylindrical portions being disposed substantially perpendicular to the longitudinal axis of the respective elongated

horizontal member, said vertical support members and said horizontal support members being disposed in a first generally common plane, and pairs of diagonal support elements extending between said vertical support members and crisscrossing one another at a position intermediate said spaced vertical support members, said diagonal support elements being disposed in a second generally common plane disposed perpendicularly to said first generally common plane, said pairs of diagonal support elements being secured to said vertical plate, support beams extending between said elongated horizontal support members, and flooring means mounted on said support beams, said interconnecting means providing for joining two such interconnecting means one on top of the other of the other to thereby provide for vertical build-up of a plurality of identical frame structures one on top of the other.



3,942,298

METHOD OF AND APPARATUS FOR PACKAGING AN ANNULAR OBJECT

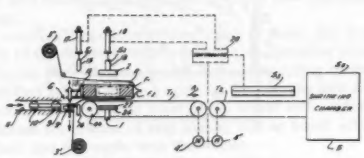
August Matzinger, and Gottlieb Benz, both of c/o Maschinenfabrik Flums AG, 8890 Flums, Switzerland

Continuation of Ser. No. 333,307, Feb. 16, 1973, abandoned. This application Sept. 25, 1974, Ser. No. 509,111

Claims priority, application Switzerland, Feb. 21, 1972, 2479/72

Int. Cl.² B65B *11/08*

U.S. Cl. 53—13 **2 Claims**



1. A method of packaging a massive annular object comprising the steps of, in succession:

a. supporting said annular object in a substantially horizontal plane on a pair of arms parallel to a transport direction and spaced apart by a distance greater than the central opening of said object above a transport path extending in said direction;

b. sealing an upper sheet and a lower sheet of thermoplastic material together at the leading side of said object in said direction;

c. passing said upper sheet over said object and said lower sheet under said object and said arms, so that said lower sheet lies between said transport path and said arms;

d. deforming said upper sheet downwardly into said opening and said lower sheet upwardly into said opening so that said sheets meet within said opening at substantially a median location between the top and bottom of the object;

e. forming an annular seam around the perimeter of said opening between the meeting sheets and an annular cut within said annular seam;

f. lowering said object onto said path and supporting said object therein by said lower sheet upon a pair of spaced-apart bands extending along said transport path;

g. withdrawing said arms from between said lower sheet and said object;

h. displacing said object and said sheets on said bands in said direction; and

i. sealing said sheets together along a trailing side of said object.

3,942,299

PACKAGING METHOD

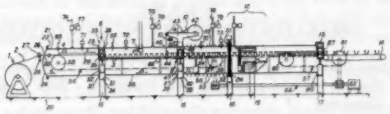
Jacques Bory, Geneva, Switzerland, assignor to Gatrun Anstalt, Vaduz, Liechtenstein

Filed July 3, 1974, Ser. No. 485,557

Claims priority, application Switzerland, July 4, 1973, 9730/73

Int. Cl.² B65B *55/06, 55/14*

U.S. Cl. 53—21 R **9 Claims**



1. A method of packaging products comprising the steps of:

establishing and maintaining an environment of substantial superatmospheric pressure;

forming connected containers by heating and deforming successive portions of a plastic band;

directing said connected containers through said environment;

feeding a product, under pressure at least equal to that of said environment into said containers in said environment;

feeding a band of metallic cover material, coated with a thermoplastic into said environment in covering relation to said containers and sealing the same thereto;

heating said product to its sterilization temperature while maintaining said pressure at a value to prevent boiling of said product and holding said product at said temperature and pressure for a sufficient time to effect complete sterilization; and

removing said sealed containers from said environment to an ambient environment and severing said containers from said bands.

3,942,300

APPARATUS FOR LAPPING A CONTINUOUS LENGTH OF HONEYCOMB MATERIAL

Desmond Deverell White, Dyserth, England, assignor to Dufaylite Developments Limited, Great Britain

Filed Apr. 8, 1974, Ser. No. 458,957

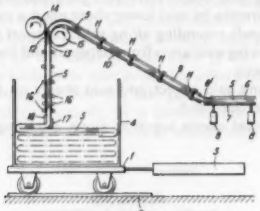
Int. Cl.² B65B *57/14, 63/04*

U.S. Cl. 53—59 R **14 Claims**

1. A system of apparatus for lapping a continuous length of unexpanded structural honeycomb material to form an accumulation of superposed unexpanded continuously connected layers comprising the combination of:

A. a guideway to confine and guide the material downwardly and allow the material to compress under its own weight and to deliver it in a compressed state confined and restrained from buckling to;

B. an outlet from said guidway;
C. support means for reception of the confined and compressed material from said outlet;
D. means for reciprocal lapping motion of said support relative to said outlet;



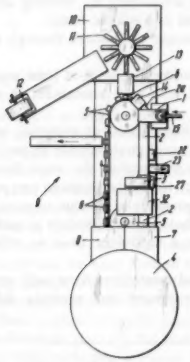
E. compensating means permitting movement of said outlet relative to said support to compensate for accumulation of compressed material lapped; and
F. means responsive to the amount of material in the guideway which means controls feed of the material into the guideway.

3,942,301

APPARATUS FOR PRODUCING LOW-OXYGEN CONTENT PACKAGES

Klaus Domke, Stuttgart-Weilimdorf, Germany, assignor to Fr. Hesser Maschinenfabrik AG, Stuttgart - Bad Cannstatt, Germany

Continuation-in-part of Ser. No. 367,645, June 6, 1973, abandoned. This application May 20, 1975, Ser. No. 579,097
Int. Cl.² B65B 31/02
U.S. Cl. 53—110 7 Claims



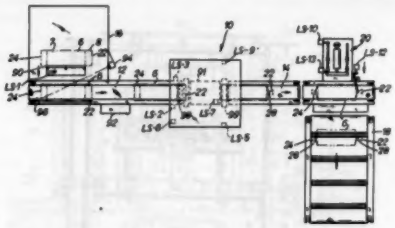
1. In an automatic packaging apparatus for producing low-oxygen content packages:
a plurality of work stations spaced along a predetermined path including a station having a device effective for filling said packages, and a station having a device effective for evacuating gases from filled packages;
conveyor means connecting said work stations and effective to move said packages along said path;
and a conduit for carrying and distributing inert or protective gas, said conduit defining a hood extending to and between said stations comprising said filling and evacuation devices, said hood providing two spaced downwardly extending sidewalls with a distributor plate therebetween provided with a plurality of finely spaced gas outlet apertures.

3,942,302

END CLOSING MACHINE FOR ROLL WRAPPED PACKAGES

Max M. Bloom, 1412 Lawndale St., Oshkosh, Wis. 54901

Filed Aug. 2, 1974, Ser. No. 494,026
Int. Cl.² B65B 51/04, 51/08
U.S. Cl. 53—138 R 14 Claims



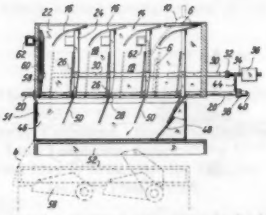
1. An apparatus for gathering the ends of a wrapping material on a rolled article, said apparatus comprising:
an infeed conveyor,
means at the end of the infeed conveyor for gathering the ends of the wrapping material,
means for binding the gathered end of said material,
an intermediate conveyor for transporting the wrapped roll to a discharge conveyor,
means at the inlet end of the discharge conveyor for gathering the loose end of the wrapping material adjacent the inlet end of the discharge conveyor,
means for binding the gathered ends of said wrapping material,
and means for ejecting the wrapped material from the discharge conveyor.

3,942,303

BISCUIT PACKING SYSTEMS

Knud Erik Kristiansen, Horsens, assignor to Thorsted Maskiner A/S, Denmark

Filed Sept. 13, 1974, Ser. No. 505,971
Claims priority, application United Kingdom, Sept. 13, 1973, 43002/73
Int. Cl.² B65B 35/22
U.S. Cl. 53—159 6 Claims



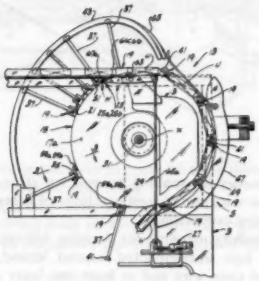
1. An apparatus for piling and packing biscuits and similar flat cakes and comprising a piling receptacle having a retractable bottom portion operable to support a number of biscuits placed generally edgewise thereon, an inlet opening located above said bottom portion and through which biscuits are consecutively introduceable into the receptacle so as to be supported by said bottom portion, a horizontally displaceable end wall member operable to support a first biscuit standing on said bottom portion in a slanting position leaned against said wall member, control means for gradually moving said end wall member rearwardly from an initial position adjacent said inlet opening so as to bring the said first biscuit away from the position in which it was introduced through the inlet opening and thus provide space for the following consecutive bis-

cuits to be introduced into the receptacle and form a lying pile therein, and outlet control means operable to retract said bottom portion for releasing the pile of biscuits in the receptacle and allowing the pile to fall down into a box situated on support means underneath said receptacle.

3,942,304
PACKAGING APPARATUS

Charles G. Hart; Richard H. Cochrane, both of Sheboygan, and Harvey Heiner, New Holstein, all of Wis., assignors to Hayssen Manufacturing Company, Sheboygan, Wis.

Filed Mar. 24, 1975, Ser. No. 561,547
Int. Cl.² B65B *51/26, 9/06*
U.S. Cl. 53—182 R **6 Claims**



1. Apparatus for packaging units in flexible sheet material wherein the units are spaced longitudinally in a tube of said material and the apparatus has means for sealing the tube between the units, said sealing means comprising:

a wheel rotatable on an axis and having two sides;

a series of sealing units carried by the wheel;

each sealing unit having means for coupling it to the wheel at both sides thereof for travel therewith and adapted for uncoupling of the sealing unit from the wheel to allow the wheel to rotate while the sealing unit remains stationary;

means for arresting a first sealing unit at a hold position and for actuating its coupling means to uncouple said sealing unit from the wheel;

successive sealing units trailing said first sealing unit being arrested by interengagement behind said arrested unit, and the coupling means thereof being actuated to uncouple said sealing units from the wheel by said interengagement;

said arresting means comprising a pair of stops, one at each side of the wheel, movable between an operative position wherein they are engageable by said coupling means of said first sealing unit to arrest said first sealing unit and to uncouple it from both sides of the wheel and a retracted position for release of said sealing unit to travel with the wheel and to couple it to the wheel;

a single actuator for the two stops; and

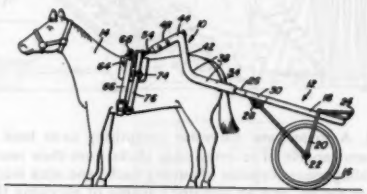
a linkage interconnecting said actuator and said two stops for simultaneously releasing said first sealing unit from both sides of the wheel and simultaneously coupling it to both sides of the wheel for travel of the sealing unit with the wheel upon operation of said actuator.

3,942,305
SULKY HITCH

Warren L. Cameron, R.D. No. 1, Box 101, Chester Springs, Pa. 19425

Filed Nov. 15, 1973, Ser. No. 416,261
Int. Cl.² B68B *1/00*
U.S. Cl. 54—2 **3 Claims**

1. In combination, a two-wheeled sulky having a frame with support assemblies rotatably supporting the wheels, a centrally disposed driver's seat on the frame above the wheels and rearwardly of the rotational axis of the wheels, a pair of forwardly and upwardly extending shafts above the wheels at the seat level and rigid with the frame with each shaft having a foot receiving stirrup oriented forwardly of the wheels and laterally outwardly of the seat to enable the driver to balance and stabilize himself in the seat, and a hitch assembly comprising a pair of side members forming extensions of said shafts, said side members including rear portions extending alongside the upper portion of the hindquarters of a horse and in laterally spaced relation thereto below the back of the horse, a pair of upwardly and inwardly extending intermediate portions forming rigid continuations of the rear portions adapted to

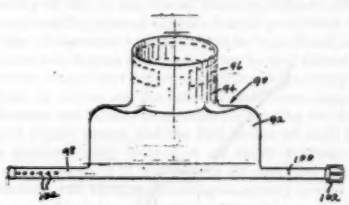


extend upwardly and inwardly alongside the front area of the hindquarters of the horse to a point above the back of the horse forwardly of the hindquarters, a pair of forwardly and downwardly extending forward portions forming rigid continuations of the intermediate portions and extending therefrom in acute angular relation and in parallel spaced relation to each other and adapted to be disposed above the back of a horse, a downwardly and forwardly extending tongue member rigidly secured to the forward end portions, and means at the forward end of the tongue member adapted to be received on an upstanding post carried by the harness adjacent the shoulder area of the horse with the weight of the driver exerting an upward force on the harness post for removing weight from the horse.

3,942,306
ANIMAL NOISE PROTECTION DEVICES

Helen C. Kulka, 200 Film Bldg., Cleveland, Ohio 44114

Filed Apr. 8, 1974, Ser. No. 458,882
Int. Cl.² B68C *5/00*
U.S. Cl. 54—80 **7 Claims**



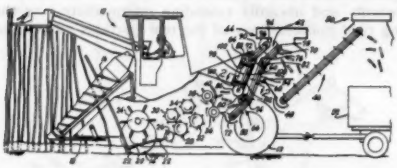
1. An animal noise protection device suitable for protecting the animal from environmental noises comprising means for encircling at least part of the head of the animal, particularly the ears, said means comprising a collar harness having a main portion which is flat when unfolded and which is adapted to extend around the shoulders of the animal, and means at the lower end of said main portion of said harness for securing the same in place, and an upper, head encircling portion integral with said main portion and adapted to partially encircle the head and particularly the ears of the animal, and sound insulation material embedded in said upper part of said harness to protect the animal from environmental noises.

3,942,307

BILLET ELEVATOR FOR SUGAR CANE HARVESTERS

Donald Jonathon Quick, Bundaberg, Australia, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands

Filed Oct. 16, 1974, Ser. No. 515,288
Claims priority, application United Kingdom, Nov. 3, 1973, 51138/73
Int. Cl.² A01D *45/10*
U.S. Cl. 56—13.9 8 Claims



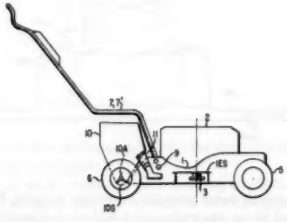
1. A sugar cane harvester comprising cane base cutting means capable of severing cane sticks from their roots, cane dividing means capable of cutting each cane stick into two or more pieces, and an elevator capable of elevating the cane pieces, characterized in that at least part of the travel of the elevator extends upwards at an inclination of from 50 to 90 degrees with respect to the horizontal when the harvester is standing on horizontal ground, and that cane retaining means is provided, said cane retaining means including a cane retainer frame supported on the harvester adjacent to the elevator for elevating cane pieces, a ceiling member with a smooth lower surface mounted on the cane retainer frame above at least a portion of the upper run of the elevator and cooperating therewith to define an upwardly-extending tunnel through which cane is conveyed, and a rotatable feed roller mounted on the cane retainer frame adjacent to the lower end of the ceiling member for insuring that cane pieces carried by the elevator are fed under the ceiling member.

3,942,308

CHEMICAL DISPENSING LAWN MOWER ARRANGEMENT

Anthony P. Vicendese, 50 Sutton Drive, and Frank Vicendese, 617 Plainfield Ave., both of Berkeley Heights, N.J. 07922

Filed June 10, 1974, Ser. No. 477,595
Int. Cl.² A01D *35/22*
U.S. Cl. 56—16.8 3 Claims



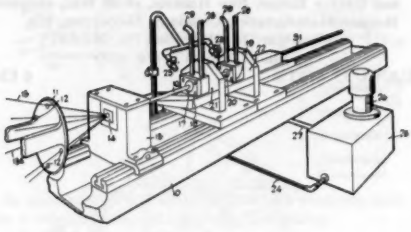
1. A power lawn mower comprising a base housing, a pair of front driving wheels and a pair of rear idler wheels attached to said base housing, an engine mounted on said base housing, rotary blade means positioned beneath said base housing and connected to be driven by said engine, hopper means integrally attached to said base housing between said rear wheels and having a width substantially equal to that of said rotary blade means, said hopper means having an agitator and a dispensing chute.

3,942,309

METHOD OF AND APPARATUS FOR MAKING WIRE STRAND

Terence Cahill, Porthcawl, Wales, assignor to GKN Somerset Wire Limited, Cardiff, Wales

Filed June 18, 1974, Ser. No. 480,925
Int. Cl.² D07B *3/00*; D02J *3/00*
U.S. Cl. 57—9 7 Claims



5. Apparatus for making compacted strand comprising a central core wire and at least one layer of wires wound around the core wire comprising:

1. a stranding machine for forming individual round steel wires into uncompacted wound strand, comprising a central core wire and at least one layer of wires wound around the core wire, the machine comprising rotatable bobbins for carrying the wires, a closing die for receiving the wires from the bobbins and assembling the wires into said uncompacted strand, and means capable of braking the rotation of the bobbins, only to the extent of keeping the wires taut between the bobbins and closing die,
2. a reducing die adjacent to the closing die to receive the uncompacted strand emerging from the closing die and to deform and reduce the cross-section area of at least the outer wires of the strand thus to increase the fill factor of the strand, the reducing die consisting of two die elements spaced apart in the direction of strand advancement, each element being arranged to effect a percentage reduction in area of at least 10%.
3. means to lubricate the strand between the die elements,
4. means for drawing the wires off the bobbins and through the closing die and for drawing the strand through the reducing die,
5. the dies being such that the wires forming the strand are free to move relative to one another in the directions of their lengths throughout their passage from the bobbins to the exit from the reducing die through distances corresponding to the differences in length of the individual wires caused by drawing the strand through the reducing die thus to prevent bird-caging.

3,942,310

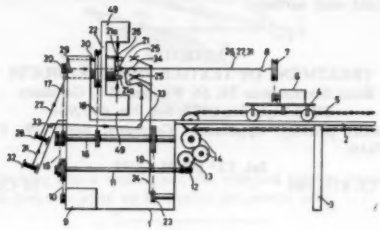
MACHINE FOR MANUFACTURING GARLANDS

Gerd Rodermund, and Helmut Kappus, both of Lahr, Germany, assignors to Gerd Rodermund, Lahr, Germany

Filed Mar. 20, 1974, Ser. No. 452,797
Claims priority, application Germany, Nov. 7, 1973, 7339710
Int. Cl.² D04D *1/02*, *3/00*; D02G *3/42*
U.S. Cl. 57—24 5 Claims

1. A machine for manufacturing garlands comprising a plurality of conveyor screws arranged at a distance from one another at the corners of an imaginary polygon which is symmetrical around the center of a line connecting two opposite corners, two of said conveyor screws which are opposite one another having longitudinal bores through which core wires are drawn,

means for driving said screws at the same speed,
alternate screws having a thread thereon extending in the same direction, alternate screws being driven in a direction opposite screws adjacent thereto,
means for supply of winding material to the periphery of conveyor screws to form a tube as the screws rotate,



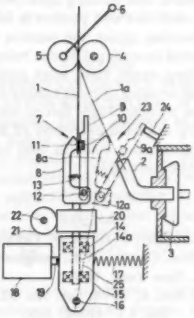
means for cutting said tube at opposite sides thereof to form severed portions of said tube,
means for supplying outer wires,
means for twisting each said core wire, its respective outer wires and its respective severed portion of said tube together.

3,942,311

METHOD AND APPARATUS FOR START-SPINNING A THREAD ON AN OPEN-END SPINNING MACHINE

Fritz Stahlecker, Bad Uberkingen, Germany, assignor to Fritz Stahlecker and Hans Stahlecker, both of, Germany

Filed July 11, 1974, Ser. No. 487,660
Claims priority, application Germany, July 21, 1973, 2337246
Int. Cl.² D01H *15/00*
U.S. Cl. 57—34 R **4 Claims**



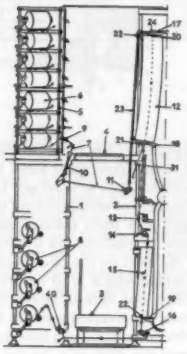
3. An apparatus for start-spinning a thread on an open-end spinning machine, containing means for opening and inserting threads into a spinning rotor and containing means for reinserting the end of said thread into said spinning rotor against the direction of draw of said thread, said means containing at least two means for clamping the end of said thread, of which at least the outer means can be caused to rotate about the longitudinal axis of said thread to eliminate the spinning twist produced in said thread so that the end of said thread is reduced to fibre tuft.

3,942,312

MACHINE FOR TREATING A TEXTILE THREAD BY FALSE TWIST

Jean Venot, Villerest, France, assignor to Chavanoz S.A., Chavanoz, France

Continuation of Ser. No. 464,211, April 25, 1974, abandoned.
This application Feb. 3, 1975, Ser. No. 546,571
Claims priority, application France, Oct. 19, 1973, 73.37988
Int. Cl.² D01H *13/04, 13/28*
U.S. Cl. 57—34 HS **6 Claims**

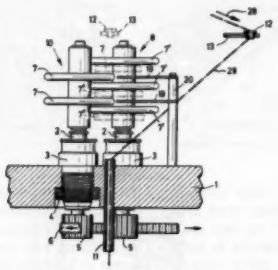


1. In a machine for the false twist texturing of textile threads in a plurality of side by side thread treating positions comprising two up-standing spaced support frames positioned in facing relation, an operator walkway at the bottom of and extending between said frames to permit access to said thread treating positions, one of said frames supporting thread supply and thread take-up means and the other of said frames supporting thread heaters and false twist spindles for treating the threads, the thread supply means and the first heater of each thread treating position being located in an upper portion of the frames above the level of the head of an operator, each first heater including an elongate, thread passageway having a inlet at its upper end in the upper portion of the frame and a thread outlet at its lower end adjacent the level of an operator's head, means for removing fumes given off by the heated thread in the heater passageway operatively connected to said thread inlet, and means for transporting and guiding the thread at each thread treating position in a path from said thread supply means through said first heater and to said thread take-up means; the improvement therein comprising a first thread delivery means positioned in said thread path adjacent the head level of an operator within reach of the operator's hands, and wherein said means for transporting and guiding the thread includes means in the upper portion of the machine for pneumatically conveying the thread continuously from the outlet of said first delivery means to the inlet of said first heater.

3,942,313
FALSE TWISTER

Hans Gassner, Schweinfurt; Max Thielemann, and Friedrich Schuster, both of Hammelburg, all of Germany, assignors to Kugelfischer Georg Schafer & Co., Schweinfurt, Germany

Filed Jan. 10, 1975, Ser. No. 540,221
Claims priority, application Germany, Jan. 15, 1974, 2401776
Int. Cl.² D02G 1/08
U.S. Cl. 57—77.4 13 Claims



1. In an apparatus for false twisting threads by means of friction discs which comprises three rotatably mounted spindles, each provided with at least one friction disc, the spindles lying at the corners of an equilateral triangle in plan view and being arranged at a fixed mutual spacing and driven in the same direction of rotation, the friction discs on each spindle overlapping the discs on the two other spindles and means for passing the thread which is to be provided with a false twist through at least one thread guide, a thread guide which is movable between a diverted position in which the thread runs clear of the friction discs and a false-twisting position in which it runs between the discs in a zig-zag path.

3,942,314
TEXTILE SPINDLE MOUNTING

Edward J. Olowinski, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

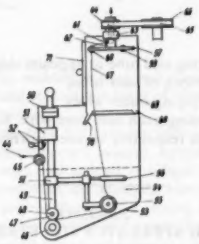
Filed Nov. 27, 1974, Ser. No. 527,730
Int. Cl.² D01H 7/12
U.S. Cl. 57—135 10 Claims

6. In combination, a textile spindle assembly, a textile machine spindle rail having an opening adapted to receive therethrough a downwardly extending portion of said spindle assembly and a noise and vibration attenuating mounting securing said spindle assembly to said rail, said mounting comprising a rigid inner member including an elongate sleeve concentrically secured about said downwardly extending portion of said spindle assembly and received through said rail opening in radially spaced relation to said rail and a support ring carried by and extending radially from said sleeve in axially spaced relation to said rail, annular elastomeric means having portions secured to opposite radial faces of said support ring, a rigid washer secured along a first free radial face of said elastomeric means adjacent said rail in parallel relation to said support ring and in radially spaced relation to said sleeve, a holder having a cylindrical casing portion concentrically surrounding said elastomeric means and support ring in radially spaced relation to said support ring and including radially outwardly directed mounting flanges, said holder including a radially inwardly directed annular clamping flange spaced from said sleeve and secured to a second free radial face of said elastomeric means opposite said first radial face, and means for securing said mounting flanges to said rail, the washer at least partially extending axially beyond the mounting flanges of the holder in the uncompressed condition of the elastomeric means, at least one annular axial surface of said elastomeric means being spaced radially from an adjacent axial surface of one of said elongate sleeve and said casing portion of the holder so as to permit radial shearing of the elastomeric means, the axial extent of the washer beyond the mounting flanges and the radial spacing of said axial surfaces being such that when the mounting flanges of the holder are secured to the rail said elastomeric means is precompressed between the washer and the clamping flange and said axial surface of the elastomeric means remains spaced from said adjacent axial surface.

3,942,315
TREATMENT OF TEXTILE FIBRE PRODUCTS

Karl Bous, Sternstrasse 74, 56 Wuppertal 2, Germany

Filed Sept. 26, 1973, Ser. No. 400,954
Claims priority, application Germany, Sept. 29, 1972, 2247810
Int. Cl.² D01H 13/30
U.S. Cl. 57—164 10 Claims



1. In a method for treating a fluid-impregnatable textile fibre band with a fluid treating agent, the steps comprising contacting such fibre band with such treating agent while moving through a zone containing such treating agent; forming the treated fibre band material into a loop by rotating a length of such treated fibre band material about an axis of rotation extending from such treating agent zone so as to subject such loop to centrifugal forces; one end portion of said loop being disposed in said treating agent zone during rotation thereof, whereby said one end portion is intensively impregnated with said treating agent; the portion of said loop subjected to the greatest centrifugal forces being disposed exteriorly of said treating agent zone after passing through said zone, whereby said treating agent is readily removed from said latter loop portion by centrifugal forces, and guiding the end portion of the loop disposed exteriorly of said treating agent along said axis of rotation whereat said band is withdrawn away from said treatment zone.

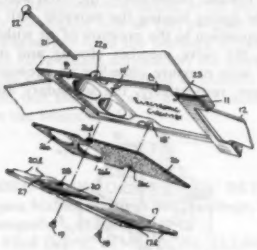
3,942,316
SECTIONED CASING FOR ELECTRONIC WATCHES

Egbert Van Haaften, Closter, N.J., assignor to Bulova Watch Company, Inc., New York, N.Y.

Filed Nov. 8, 1974, Ser. No. 522,271
Int. Cl.² G04C 3/00
U.S. Cl. 58—23 R 5 Claims

1. A partitioned casing for a solid state electronic watch having an electronic module and battery cells for powering the module, said casing having a movement section accommodating said module and a power section receiving said cells, said casing having a back opening surrounded by a flange, the back being closed by two adjoining rectangular hatch pieces, one covering the movement section and the other the power section, the opposing ends of the hatch pieces having lips which fit under the flange, the adjoining ends of the hatch pieces having complementary grooves defining a split bore receiving a removable locking pin, the movement hatch piece carrying

on its underside depressible contact springs which engage the poles of the cells seated in said power section whereby when



the locking pin is withdrawn, the released springs cause the hatch piece to jump up to expose the power cells.

3,942,317

COMPONENT PARTS FOR WATCH MOVEMENTS

Jean-Pierre Schluep, Evilard, Switzerland, assignor to Ebauches Bettlach S.A., Bettlach, Switzerland

Filed Dec. 3, 1974, Ser. No. 529,060

Int. Cl.² G04B *33/00, 5/02, 17/00, 31/18*

U.S. Cl. 58—59 **10 Claims**

1. A component part for watch movements, consisting of a plastic body shaped solely by molding, with particles of a heavy metal dispersed throughout said body, said part having an average specific gravity of more than 8.

3,942,318

TIME CORRECTION DEVICE FOR DIGITAL INDICATION ELECTRONIC WATCH

Kinji Fujita, Shimosuwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Division of Ser. No. 204,064, Dec. 2, 1971, Pat. No. 3,795,098. This application Mar. 4, 1974, Ser. No. 447,699

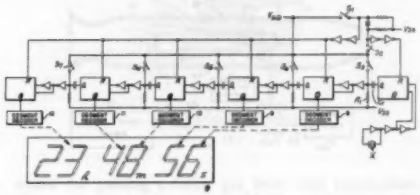
Claims priority, application Japan, Dec. 3, 1970, 45-106454

The portion of the term of this patent subsequent to Mar. 5, 1991, has been disclaimed.

Int. Cl.² G04B *27/00*

U.S. Cl. 58—85.5 **2 Claims**

1. In a digital indication electronic wristwatch comprising standard high frequency oscillator means; frequency divider circuit means coupled to said oscillator means for dividing the frequency output thereof into time indication signals, said frequency divider circuit means being formed of COS/MOS circuit elements and including a plurality of series connected stages, said divider stages being adapted to each advance in count by one upon the application of each pulse to the input thereof, the count of each of a plurality of said divider stages producing time indication signals representative of a digit of time; digital display means adapted for the digital display of said digits of time; means coupled to said frequency divider circuit means for receiving said time indication signals therefrom and to said display means for applying said time indication signals representative of digits of time to corresponding digits of said display means for driving said display means; and time correction means including a source of d.c. voltage, a manually operable time correction switch and means connecting said switch in series with said d.c. voltage source and the input of one stage of said frequency divider circuit means associated with at least one digit of time display of said display means so that said switch is positioned between said d.c. voltage source and said input of said one stage of said frequency divider circuit and so that said switch is out of the series connection of said divider stages, said switch controlling the application of said d.c. voltage to the input of said one stage to apply a pulse to said one stage for each manual operation of said switch for advancing the count of said stage by one for each manual operation of said switch without opening the circuit between said one stage and the stage in advance of said one stage, so that the associated digit of time advanced by one for each manual operation of said switch is displayed on said display means.



3,942,319

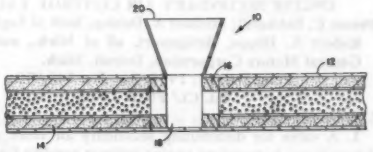
WATER-FREE SOLID PROPELLANT EXHAUST GASES

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 7, 1974, Ser. No. 478,794

Int. Cl.² F02K *9/04*

U.S. Cl. 60—253 **10 Claims**



1. In combination with a solid propellant propulsion system comprised of a combustion chamber for burning propellant, a solid propellant composition contained in said combustion chamber for supplying propulsion gases as said propellant combustion is burned, and an exhaust nozzle connected to said combustion chamber for exhausting said propulsion gases, a means for reducing the quantity of water in said propulsion gases, said means comprised of a high nitrogen-containing compound selected from tetrazole and bitetrazole.

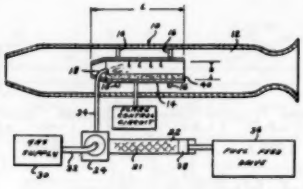
3,942,320
SOLID BORON FUEL BURNER FOR RAMJET

Paul J. Ortwerth, Rio Rancho, N. Mex.; Lowell W. Ormand, Tucson, Ariz., and David B. Wilkinson, Xenia, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 349,900, April 9, 1973, abandoned. This application Oct. 4, 1974, Ser. No. 512,388

Int. Cl.² F02K *7/10*

U.S. Cl. 60—270 S **2 Claims**



1. A solid boron fuel burning ramjet engine, comprising, a combustion chamber; said combustion chamber having an air inlet at one end and an exit nozzle at the other end; a burner for powdered solid boron fuel within said combustion chamber; said burner having a substantially cylindrical tubular member with a refractory inner wall; said tubular member having a length to diameter ratio of at least 2.5 to 1; a fuel mill; said fuel mill having a circular chamber and a wire brush positioned within said chamber, substantially filling said chamber; means for rotating said brush at a predetermined speed; means for continuously supplying solid boron fuel pellets to the fuel mill; said means for continuously supplying solid boron fuel pellets to said fuel mill including means for positioning a fuel pellet against the periphery of said wire brush; means for advancing pellets toward the wire brush at a predetermined rate; a fuel outlet positioned adjacent the periphery of said brush at a position angularly displaced from said pellet positioning means; means, connected to said fuel outlet, for supplying powdered solid boron fuel from the fuel mill to said burner; means for providing a gas flow through said circular chamber around said wire brush to said outlet and then to the burner to carry the fuel from the fuel mill to the burner; means for supplying air from said air inlet to said burner; said burner being spaced from the wall of said combustion chamber for providing a secondary air flow path around the burner to thereby provide secondary burning at the outlet of said burner; means for igniting said burner.

3,942,321
ENGINE SECONDARY AIR CONTROL VALVE

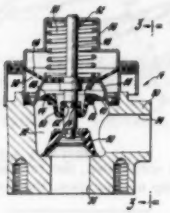
Dennis C. Eckhardt; Michael A. Dunlap, both of Saginaw, and Robert A. Hoppe, Bridgeport, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 11, 1975, Ser. No. 548,970

Int. Cl.² F02B *75/10*

U.S. Cl. 60—289 **1 Claim**

1. A valve for distributing secondary air from an engine driven pump between an engine exhaust conduit for emission control and at least one accessory device for actuation thereof and further for maintaining a minimum or greater pressure in the air supplied to the accessory device, the valve comprising a housing defining a valve chamber with an inlet from the air pump and an outlet to the exhaust conduit and a pressure chamber having an outlet to the accessory device; a fixed wall separating the valve and pressure chambers, the fixed wall having a central opening and one or more peripheral openings opposite the valve chamber outlet; a movable wall forming one side of the pressure chamber; a shaft fixed to the movable wall for co-movement therewith, the shaft having one end projecting through the fixed wall central opening into the valve chamber adjacent the valve chamber outlet and a circumferential groove; a valve member on the one end of the shaft, the valve member being effective to open and close the valve chamber outlet with movement of the movable wall away from and toward, respectively, the fixed wall; a spring in the housing, the spring biasing the movable wall toward the fixed wall in opposition to the pressure of air within the pressure chamber, the valve member closing and opening the valve chamber with pressure chamber air pressure less than and greater than, respectively, the secondary air minimum



pressure; and a flexible annular sealing valve member having a central circumferential bead sealingly engaging the shaft circumferential groove, an outer peripheral groove sealingly engaging the periphery of the fixed wall central opening, and at least one flexible flap portion covering the fixed wall peripheral openings within the pressure chamber and being effective to act as a check valve for allowing air flow only from the valve chamber to the pressure chamber, which air flow maintains the pressure chamber air pressure at or above the secondary air minimum pressure.

3,942,322
DEVICE IN HYDRAULIC PERCUSSION TOOLS

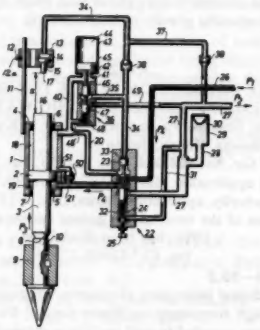
Sten Ove Hammarstrand, Hudiksvall, Sweden, assignor to Svenska Hymas Aktiebolag, Hudiksvall, Sweden

Filed Oct. 18, 1974, Ser. No. 515,926

Claims priority, application Sweden, Oct. 23, 1973, 73143919

Int. Cl.² F15B *1/02, 11/15*

U.S. Cl. 60—371 **5 Claims**



1. An arrangement for hydraulically operating a percussion tool and the like, comprising

1. a cylinder and a piston reciprocable therein through a working stroke and a return stroke, the piston dividing the cylinder into a working pressure chamber and a return pressure chamber,
2. a first, spring-actuated valve means controlling the strokes of the piston,
3. a pressure accumulator connected to the working pressure chamber of the cylinder, the accumulator receiving

pressure from the working pressure chamber during the return stroke and discharging the pressure during the working stroke,

4. a member displaceably mounted in the pressure accumulator for movement into an end position when the pressure is discharged from the pressure accumulator, and
5. a second valve means actuated by the displaceable member in the end position thereof to control the first valve means so that the first valve means causes the piston to perform the return stroke.

3,942,323

HYDRO OR OLEOPNEUMATIC DEVICES

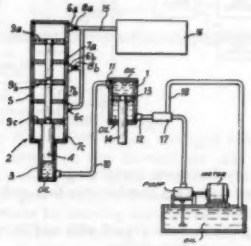
Edgard Jacques Maillet, Chateau de l'Ermitage, Ludow Medoc 33290 Blanquefort, France

Filed Oct. 8, 1974, Ser. No. 513,066

Claims priority, application France, Oct. 12, 1973, 73.36457

Int. Cl.² F15B *1/02*

U.S. Cl. 60—413 **6 Claims**



1. An oleopneumatic pressure transformer including at least one first cylinder means having a high pressure side and a low pressure side open to atmosphere with first piston means reciprocal therein in response to pneumatic pressure being introduced into said cylinder on the high pressure side,

an accumulator having a second cylinder with a second piston reciprocal therein which is rigidly coupled to said first piston means and actuatable by said first piston means and containing liquid responsive to actuation of said second piston,

hydraulic utilization means coupled to said second cylinder of said accumulator to utilize the energy produced by the pneumatic pressure, and

a pneumatic reservoir at working pressure coupled to said first cylinder means in closed circuit relationship completely isolated from said liquid and means for introducing said pneumatic pressure into said first cylinder means so that the piston therein acts as a motor element,

the volume VR of said reservoir being substantial in comparison to the volume VC of said first cylinder means, so that the pneumatic working pressure is substantially constant, the ratio VC/(VR + VC) being equal to the permissible variation in the pneumatic pressure according to the energy use of said hydraulic utilization means.

3,942,324

HOT GAS ENGINE

Lennart Nils Johansson, Eskilstuna, and Ragnar Karl Olof Gronvall, Borensberg, both of Sweden, assignors to Forenade Fabriksverken, Eskilstuna, Sweden

Filed July 12, 1974, Ser. No. 487,884

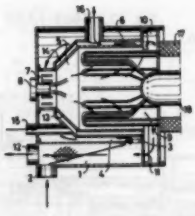
Int. Cl.² F01B *29/10*

U.S. Cl. 60—517 **3 Claims**

1. A hot gas engine in combination with a combustion chamber for generating a heating medium to heat a selected space, comprising:

a. injector means for injecting fuel into said combustion chamber;

b. intake means for passing combustion air from the atmosphere to said injector means;



c. means for passing exhaust gas from said combustion chamber in heat exchange relationship with said intake means; and

d. passage means for passing a heat exchange fluid from an intake to an outlet to heat a selected space, said air passage means being disposed in heat exchange relationship with said air intake means and said combustion chamber.

3,942,325

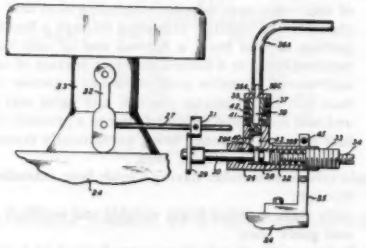
HYDRAULIC THROTTLE ACTUATOR

David Franklin Howeth, 1207 Elizabeth Blvd., Granbury, Tex. 76048

Continuation-in-part of Ser. No. 252,005, May 10, 1972, Pat. No. 3,397,967. This application Nov. 30, 1973, Ser. No. 420,533

Int. Cl.² F15B *7/00*

U.S. Cl. 60—533 **3 Claims**



1. A fluid pressure intensifier for use in a hydraulic system comprising:

a cylinder having openings in opposite ends thereof,

a free-floating piston located in said cylinder for movement therein,

said piston having oppositely facing surfaces of different areas to be exposed to hydraulic fluid by way of said openings for providing a differential in area across said piston for fluid pressure intensification purposes,

the larger of said surfaces facing one end of said cylinder,

biasing means for normally urging said piston toward said one end of said cylinder, and

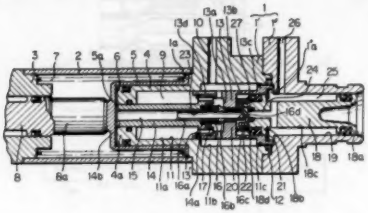
a continuously open passageway including a restrictive orifice communicating between the ends of said cylinder on opposite sides of said piston for providing a two-way fluid flow passageway between the ends of said cylinder.

3,942,326

HYDRAULIC BRAKE FORCE-MULTIPLYING DEVICE

Yoshihiro Hayashida, Chigasaki, Japan, assignor to Tokico Ltd., Japan

Filed July 15, 1974, Ser. No. 488,843
Claims priority, application Japan, Mar. 18, 1974, 49-30834
Int. Cl.² B60T 13/58
U.S. Cl. 60—563 3 Claims



1. A braking force multiplying device for use in a hydraulic braking system of the type including a master cylinder, a source of hydraulic fluid, and a fluid drain, said device comprising:

a body coupled to said master cylinder, said body having a projecting portion extending toward said master cylinder;

a cup-shaped power piston having a first open end and a second closed end, said projecting portion having an outer periphery sealingly and slidably received through said open end of said power piston, said closed end of said power piston cooperating with a piston of said master cylinder;

a working chamber defined between said power piston and said projecting portion;

a bore extending through said body coaxially with respect to said power piston;

a valve seat member slidably fitted in said bore, a first end of said valve seat member extending into said working chamber and sealingly extending through a first diameter portion of said bore, a second end of said valve seat member being in a second diameter portion of said bore, said second diameter portion having a greater diameter than said first diameter portion, said valve seat member and said body defining therebetween a pressure chamber, said pressure chamber being permanently connected to said source of hydraulic fluid;

said valve seat member having a guide bore extending therethrough;

a valve stem member being slidably and sealingly fitted in said guide bore;

a first normally closed valve means formed by a valve body on said valve stem member and a seat on said valve seat member;

an input shaft slidably and sealingly fitted in said body, said input shaft being normally spaced from said valve seat member;

an intermediate chamber defined between a first inner end of said input shaft and said valve seat member;

first passage means in said valve stem member for permanently communicating said intermediate chamber with said working chamber;

second passage means in said input shaft for providing communication between said intermediate chamber and said fluid drain;

a second valve means formed between said input shaft and said valve stem member, when said input shaft is moved inwardly of said body, for blocking communication between said intermediate chamber and said fluid drain; and

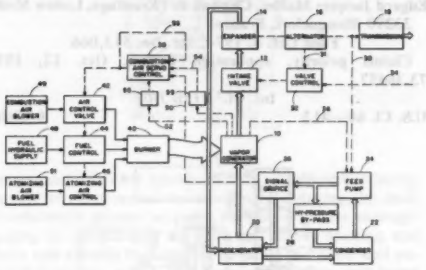
said input shaft comprising means, when said input shaft is moved inwardly of said body, for opening said first valve means and for communicating said intermediate chamber with said pressure chamber.

3,942,327

CONTROL SYSTEM FOR EXTERNAL COMBUSTION ENGINE

William B. Noe, Concord, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Division of Ser. No. 250,638, May 5, 1972, Pat. No. 3,826,282.
This application Mar. 25, 1974, Ser. No. 454,507
Int. Cl.² F01K 13/02
U.S. Cl. 60—665 2 Claims



1. A vapor cycle engine comprising:

a. means for burning a combustible fuel and air mixture to product heat energy;

b. a vapor generator associated with said burning means for vaporizing a working fluid;

c. expander means for expanding working fluid vapor to produce work, the power output level of said expander being functionally related to the volume of working fluid vapor expanded;

d. means for condensing vaporized working fluid exhausted from said expander means;

e. means for transporting condensed working fluid to said vapor generator;

f. means for controlling admission of such fuel and air mixture to said burning means;

g. means for biasing said controlling means toward a predetermined setting, the biasing force being functionally related to the flow rate of working fluid through said vapor generator;

h. first means for communicating with a pressurized fluid supply;

i. second means for communicating with a fluid reservoir at a pressure level below the pressure of said fluid supply; and

j. valve means associated with said first and second means establishing fluid communication between said fluid supply and said controlling means for providing a fluid pressure signal to overcome said biasing means and establishing fluid communication between said controlling means and said reservoir means for permitting said biasing means to overcome said fluid pressure signal.

3,942,328

AUTOMATIC CANAL GATE

Mills E. Bunger, 3510 Teller St., Wheat Ridge, Colo. 80033

Filed Feb. 24, 1975, Ser. No. 552,348
Int. Cl.² E02B 7/42
U.S. Cl. 61—25 6 Claims

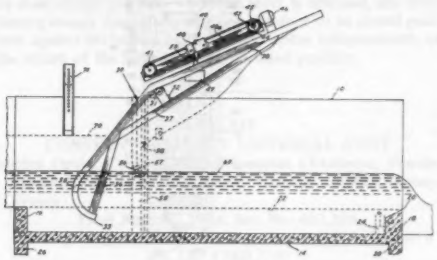
1. Gate apparatus for automatically regulating water flow into distribution canals and the like, comprising:

a. a rectangular canal section having upright walls, a generally horizontal, flat bottom and having inlet and outlet ends;

b. a low-height dam at the inlet end and a low-height dam at the outlet end providing a dead-water pool therebetween;

c. a gate means pivotally mounted on a shaft supported by said upright walls, and positioned to close against said bottom in said pool;

d. extension means depending from said gate inclusive of a carriage having weights for moving toward and away from the gate balancing the same in relation to inlet water against the gate means;



e. means for moving said carriage;

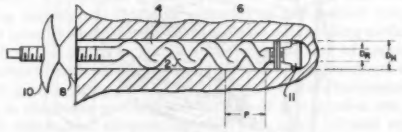
f. adjustable float-switch means arranged closely adjacent said gate means on the downstream side of said gate means, operable by the depth of water in the downstream side of said gate means, and connected with and operating said means for moving said carriage; and

g. said gate means including a rearwardly curved lower portion terminating at a discharge lip for directing incoming water under said gate means and into said dead-water pool for reducing the gross velocity thereof.

3,942,329
FLEXIBLE ROCK BOLT

Clarence O. Babcock, Lakewood, Colo., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Feb. 11, 1975, Ser. No. 549,126
Int. Cl.² E21D *20/02*; F16B *13/04*
U.S. Cl. 61—45 B **4 Claims**

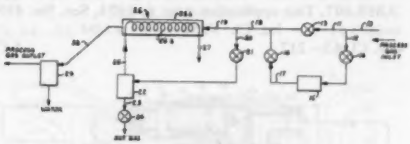


1. In a combination of a ground formation wherein an inner surface constitutes a borehole extending from an outer surface thereof, a rock bolt, and means affixing said rock bolt to said ground formation, said rock bolt having an elongated portion thereof disposed within said borehole in longitudinal alignment therewith, said portion being a rod element having a substantially uniform, generally circular cross-sectional area and a form characterizable as a flexible helix of a substantially uniform diameter throughout and a pitch that is large relative to a diameter of said rod element wherefore the spring index of said rod element is greater than 2, and said means affixing comprising first and second means securing said bolt to said inner and outer surfaces of said formation, respectively.

3,942,330
GAS DRYING APPARATUS AND METHOD

Lowell William Schroder, 2536 S. 39th, Lincoln, Nebr. 68506

Filed July 1, 1974, Ser. No. 484,404
Int. Cl. F25b *9/02*
U.S. Cl. 62—5 **6 Claims**



1. A process for removing water vapor from a compressed gas stream, the steps of said process comprising:

dividing said gas stream into first and second streams;

generating a cold gas stream and a hot gas stream by directly passing said first stream, without intermediate heat exchange, through a vortex tube separator;

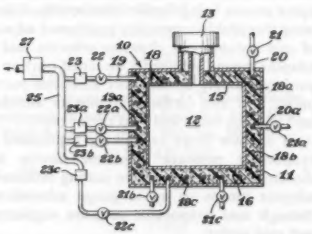
cooling said second stream by passing same in heat exchange relationship with said cold gas stream to cause the temperature lowering of said second stream and the condensation of water vapor therefrom; and

separating the condensate from said second stream.

3,942,331
CRYOGENIC TANK

Ritchey O. Newman, Jr., and Thomas W. McCullough, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed July 8, 1974, Ser. No. 486,720
Int. Cl.² F17C *7/02*
U.S. Cl. 62—45 **4 Claims**



1. In a cryogenic container, the cryogenic container comprising:

an exterior container wall and

an interior container wall, the interior container wall being thin, deformable and flexible relative to the exterior container wall, the interior and exterior container walls being in generally fixed spaced apart relationship,

a synthetic resinous cellular foam insulation being disposed between the interior container wall and the exterior container wall, the container having

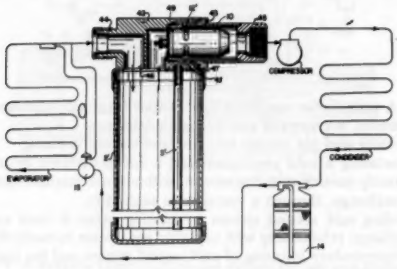
closure means, the improvement which comprises

a conduit in operative communication with space between the interior container wall and the exterior container wall, the conduit being located generally adjacent to the exterior container wall, the conduit being in combination with means to maintain a subatmospheric pressure between the interior wall and the exterior wall, said pressure being sufficient to distend the interior container wall and exert sufficient pressure on the insulation to maintain said insulation in contact with an inner surface of the exterior container wall.

3,942,332
COMBINATION LIQUID TRAPPING SUCTION ACCUMULATOR AND EVAPORATOR PRESSURE REGULATOR DEVICE

Ernest W. Schumacher, Portsmouth, Va., assignor to Virginia Chemicals, Inc., Portsmouth, Va.

Division of Ser. No. 388,281, Aug. 14, 1973, Pat. No. 3,858,407. This application Aug. 6, 1974, Ser. No. 495,168
Int. Cl.² F25B *43/00, 41/04*
U.S. Cl. 62—217 **4 Claims**



1. A liquid trapping suction accumulator adapted for insertion in a vapor-compression refrigeration system between the evaporator and compressor, comprising:

A. An accumulator chamber defined by a casing vertically extending and having a top and a bottom;

B. colinear horizontally disposed inlet and outlet ports in the top, and opening into said chamber and respectively adapted for operative connection into said evaporator and said compressor;

C. removable adaptor means forming an evaporator pressure regulator chamber positioned in said outlet port in communication with said accumulator chamber; said adaptor means being further characterized as:

i. being threadably removably positioned adjacent the top of said accumulator chamber wherein said removable adaptor means includes a threaded portion engaging a correspondingly horizontally threaded portion in said outlet port and further defining an annulus between said adaptor body and said outlet port;

ii. said adaptor body containing a pressure responsive evaporator pressure regulator device horizontally therein and in compressive sealing relationship to the adaptor means so as to guage admission of vapor through said evaporator pressure regulator chamber and said outlet;

D. an eductor tube extending independently from the bottom of said accumulator chamber into said evaporator pressure regulator chamber through said annulus, the adaptor wall of said annulus including a discharge orifice perpendicular to said evaporator pressure regulator; and

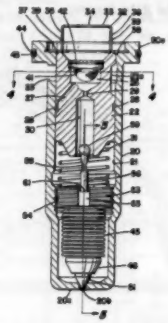
E. a filter-drier positioned between the outlet of the condenser in the system and a thermostatic expansion valve at the inlet of the evaporator in the system.

3,942,333
SUCTION THROTTLING VALVE

Arthur S. Kish, Lyndhurst, Ohio, assignor to Murray Corporation, Cockeysville, Md.

Filed Nov. 13, 1974, Ser. No. 523,224
Int. Cl.² F25B *41/04*
U.S. Cl. 62—217 **7 Claims**

1. In a suction throttling valve of the character described, a cup-shaped valve body having an open top and a closing bottom wall provided with a central aperture, said body having ports below said open top communicating the interior of said body with the space exteriorly of said body, a piston valve slidably mounted in the upper portion of said body and adapted to cover and uncover said ports, the portion of said body below said piston valve constituting a spring chamber, means for controlling the position of said piston valve, said means comprising a supporting coil spring mounted in said spring chamber and acting in conjunction with fluid pressure in said spring chamber and fluid pressure applied to the top of the piston valve, means for controlling the fluid pressure in said spring chamber, said last-named means consisting of a

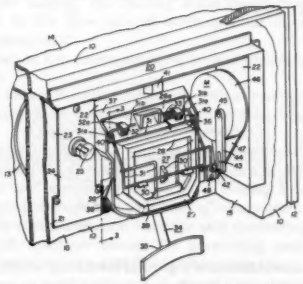


bellows assembly comprising a bellows having a closed lower end and an open upper end, and a nut secured to and closing said open upper end of the bellows, said nut being in threaded engagement with the inner wall of said body, whereby said bellows assembly may be rotated to vary or adjust the axial position of said assembly relatively to said body, and a pilot valve subassembly secured to the lower end of said bellows, said subassembly comprising a needle adapted to close said aperture upon expansion of said bellows.

3,942,334
DOOR DELAY CLOSING MECHANISM FOR THE ICE CHUTE FROM A POWER DRIVEN ICE DISPENSER IN A FREEZER-REFRIGERATOR

John J. Pink, Cedar Rapids, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa

Filed Jan. 8, 1975, Ser. No. 539,291
Int. Cl.² F25D *23/02*
U.S. Cl. 62—266 **4 Claims**



1. In a freezer-refrigerator unit having a vertical front closure and power driven means for dispensing ice from the interior of the unit to the exterior thereof down an inclined chute through the front closure, the chute having a door closing its lower exterior end and hinged for upward movement for gravitational discharge of ice from the chute when the dispensing means is activated, the combination therewith of a door operating lever movable between door closed and door open positions, switch means operated by the lever to activate de-activate the dispensing means when the lever is in

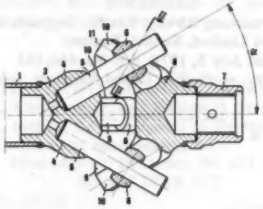
its door open and door closed positions, respectively, the lever being operatively associated with the door to positively open the same when the lever is moved to its door open position, door biasing means normally maintaining the door in its closed position, lever biasing means normally maintaining the lever in its door closed position, the lever when moved to its door open position positively opening the door against both of the door and lever biasing means, and an inertia motor operatively associated with the door effective to delay return of the door to its closed position after return of the lever to its door closed position, said lever biasing means alone returning the lever to its door closed position when the lever is released, the door biasing means thereafter returning the door to its closed position against the action of the inertia motor independently of the return of the lever to its door closed position.

3,942,335

CONSTANT VELOCITY UNIVERSAL JOINT

Michel Orain, Conflans-Sainte-Honorine (Yvelines), France, assignor to Societe Anonyme: Glaenzer Spicer, Poissy, France

Filed June 24, 1974, Ser. No. 482,555
Claims priority, application France, Oct. 9, 1973, 73.36078
Int. Cl.² F16D 3/30
U.S. Cl. 64—21 14 Claims



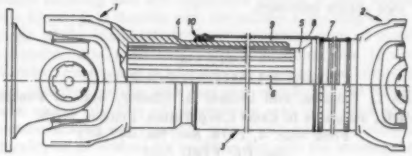
1. A constant velocity universal joint for transmitting motion between two shafts capable of running at an angle to one another, said joint comprising at least four units each including a spindle with the number of said units being an even number, a roller and a pair of opposed grooves, each roller being slidably and rotatably mounted on a respective one of said spindles and having a part-spherical outer rolling surface, each of said shafts including a member, said pair of opposed grooves of each unit being formed in one of said members and each groove being part-circular in cross-section corresponding to the outer part-sperical surface of a respective one of said rollers and cooperating therewith; each of said units having said spindle thereof fixed relative to and mounted for movement with one of the shafts and said pair of opposed grooves thereof fixed relative to and mounted for movement with the other shaft, the longitudinal axis of said spindle being disposed in a plane passing through the axis of said one shaft and obliquely thereto, the longitudinal axis of said pair of opposed grooves being disposed in a plane passing through the axis of said other shaft and obliquely thereto, the angle formed between the longitudinal axis of said spindle and the axis of said one shaft being equal to the angle formed between the longitudinal axis of said pair of opposed grooves and said other shaft, the angular and spatial distribution of said spindles and the pairs of opposed grooves relative to their respective shafts being symmetrical when said shafts are in axial alignment.

3,942,336

SLIDE COUPLING FOR CARDAN JOINT SHAFTS

Josef Schultenklimper, Essen, Germany, assignor to Gelenkwellenbau GmbH, Germany

Filed Feb. 22, 1974, Ser. No. 445,308
Claims priority, application Germany, Feb. 22, 1973, 2308820
Int. Cl.² F16D 3/06
U.S. Cl. 64—23 12 Claims



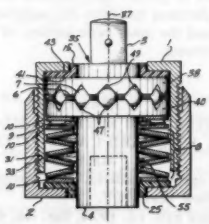
1. A power shaft having univeral joints adapted to move toward and away from each other without accommodating relative rotation therebetween which comprises a first universal joint having a hollow internally splined cylindrical hub projecting therefrom, a second universal joint, an externally splined pin extending from said second universal joint into said hollow hub in splined connected engagement therewith, a sleeve rigidly secured on and supported by the axial inner end of said pin enveloping said hub in radially spaced relation therewith having a free end intermediate the ends of the hub and defining a chamber surrounding the hub and pin, a bearing and seal combination anchored directly to the sleeve in the mouth of free end of said sleeve and having a stiff bearing ring riding on said hub to hold the sleeve in concentric relation with the hub and a flexible sealing ring axially outward from said bearing ring riding on the hub to seal the chamber between the sleeve and hub, and said pin and hub adapted to slide axially relative to each other but held against relative rotation by the splined teeth thereof.

3,942,337

TORQUE LIMITING DEVICE

Ralph R. Leonard, Kent, and Ted J. Taylor, Seattle, both of Wash., assignors to Industrial Analytics Inc., Kent, Wash.

Filed Sept. 16, 1974, Ser. No. 506,601
Int. Cl.² F16D 7/06
U.S. Cl. 64—29 5 Claims



1. A torque limiting device comprising in combination:

a cylindrically shaped housing comprising first and second cup shaped sections, said first cup shaped section having an outer threaded surface around the lip portion thereof, and said second cup shaped section having a mating internal thread around the lip porition thereof, said first section rotatable relative to said second section about the axis of said cylindrical housing;

first and second shafts disposed along the axis of said cylindrical housing, said first shaft rotatably supported in the bottom of said first cup shaped section, and said second

shaft rotatably supported in the bottom of said cup shaped second section;

a clutch assembly disposed in said housing and interconnecting said first and second shafts, said clutch assembly including two clutch members operative to separate and break the interconnection between said first and second shafts when the torque resistance to rotation of said first or second shaft exceeds a predetermined level; and,

said rotation of one of said cup shaped sections relative to the other providing adjustment of the gap between said two clutch members.

3,942,338

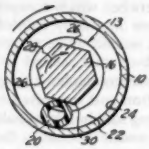
TORQUE LIMITING COUPLING

James L. Furlette, and Donald A. Stadler, both of Fenton, Mich., assignors to Excel Corporation, Fenton, Mich.

Filed Mar. 4, 1974, Ser. No. 447,471

Int. Cl.² F16D 7/02

U.S. Cl. 64—30 D **17 Claims**



1. A torque overload coupling for transmitting torque to a tubular member from a driving shaft extending axially throughout said tubular member, said coupling comprising a pair of bearings rotatively supporting said tubular member from said shaft, each of said bearings being disposed at an end of said tubular member, an intermediate portion of said shaft between said bearings having a polygonal shape in cross section, and a circularly cylindrical diametrically resilient elongated member longitudinally disposed in said tubular member between the peripheral surface of said shaft portion of polygonal shape and the inner bore surface of said tubular member and freely rotatable therein, said resilient member having a diameter normally larger than the widest distance between the peripheral surface of said shaft section of polygonal shape and the inner bore surface of said tubular member but being sufficiently resilient to permit said resilient member to roll past points where distance between the peripheral surface of said shaft section and the inner bore surface of said tubular member is the narrowest.

3,942,339

CARRIAGE FOR HAND KNITTING MACHINES HAVING INTEGRAL JACQUARD CAM PATTERN CHANGING MEANS

Howard D. Rogers, Westfield, N.J., assignor to The Singer Company, New York, N.Y.

Filed Feb. 14, 1974, Ser. No. 438,830

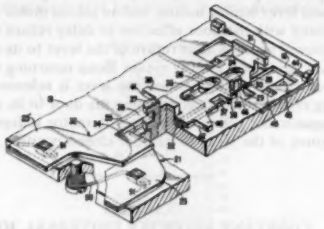
Int. Cl.² D04B 7/00

U.S. Cl. 66—75 R **5 Claims**

1. In a carriage for a hand knitting machine having a plurality of cams that are sequentially arranged and adjustable between inoperative and operative positions to thereby define at least one raceway for the butts of knitting needles and in which a multiplicity of said cams are operatively connectable to individually actuable lever means to be shifted between said inoperative and operative positions, the improvement which comprises:

a first one of said lever means operatively connected to a first plurality of said cams for actuating only said first plurality of said cams to said operative position;

a second one of said lever means operatively connected to a second plurality of said cams for actuating said second plurality of said cams to said operative position; and,



means associated with said first lever means and said second lever means which upon actuation of said second lever means operates on and actuates said first lever means whereby said first plurality of said cams and said second plurality of cams are both placed in operative positions.

3,942,340

APPARATUS FOR WASHING AND LAUNDERING GARMENTS

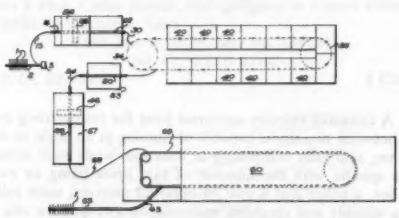
Christopher Armstrong Kirkby, Kendal, England, assignor to Ibis Engineers Limited, Kendal, England

Filed July 5, 1974, Ser. No. 486,103

Claims priority, application United Kingdom, July 9, 1973, 32662/73

Int. Cl.² D06F 31/00

U.S. Cl. 68—3 R **8 Claims**



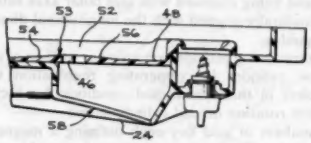
2. Apparatus for processing garments on hangers comprising traversing conveyor means, means for transferring hangers each carrying a garment to be processed from a supply region where the hangers are randomly but relatively closely grouped to said conveyor means including means for extracting said hangers one at a time from said supply and disposing them in spaced relation along said conveyor means, means for intermittently advancing said hangers along said conveyor means, means providing a first processing station wherein said hangers on said conveyor means are passed through liquid spray and drip compartments, means transferring said hangers in turn from said conveyor means to an endless conveyor, means providing a second processing station wherein said hangers on the endless conveyor pass through further liquid spray and drip compartments, means subsequently transferring said hangers to further conveyor means, and means providing a drying chamber through which the hangers move on said further conveyor means.

3,942,341

ADDITIVE DISPENSING SYSTEM

Henry W. Sang, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Aug. 30, 1974, Ser. No. 501,877
Int. Cl.² D06F 39/02
U.S. Cl. 68—17 R 6 Claims



1. In a treating agent dispenser system for a washing machine of the top loading type including a dispenser adapted to be mounted above the machine's wash tub, said dispenser having a plurality of compartments for holding treating agents to be dispensed into the wash tub, a channel having a bottom and side walls in liquid flow communication between one compartment and a liquid supply means arranged for directing liquid into the channel,

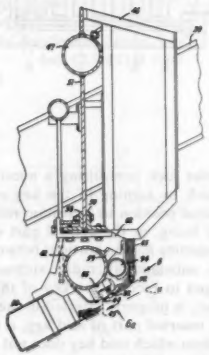
the improvement comprising a contaminate separating means including an aperture in the bottom wall of the channel upstream of the compartment, said aperture being spaced from the channel side walls and that portion of the aperture adjacent each side wall being divergent in a direction away from the side walls inwardly, whereby contaminates may pass through the aperture prior to introduction into the compartment.

3,942,342

APPARATUS FOR DYEING AND PRINTING MATERIALS

Norman E. Klein, Inman, and William H. Stewart, Jr., Spartanburg, both of S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed May 17, 1974, Ser. No. 471,110
Int. Cl.² D06B 1/02
U.S. Cl. 68—205 R 7 Claims



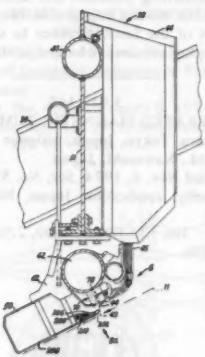
1. In apparatus for applying dye to a moving material to print a pattern thereon, including means for moving the material in a path of treatment, at least one elongate dye jet gun bar having a plurality of dye-emitting jet orifices positioned along the bar for directing the dye in plural streams onto the material, and support means having support elements positioned on the sides of the path of material treatment for positioning the gun bar across the path; the improvement wherein said gun bar comprises an elongate structural support plate extending across the path of material treatment, means attaching the support plate to said support elements for support thereby, means attached to one elongate edge of said plate for imparting structural stability thereto, an elongate dye manifold pipe having an inlet for receiving dye for distribution and a plurality of dye outlets spaced along its length, means securing the dye manifold pipe along the other elongate edge of said plate for support thereby, an elongate dye applicator section for dispensing dye in plural streams onto the moving material, and means securing said dye applicator section to said manifold pipe for support thereby with the section extending along the length of the manifold pipe and across the path of material treatment, said applicator section including dye receiving chamber means and a plurality of passageways connecting said chamber means with said dye outlets of said manifold pipe, and a plurality of channels in said applicator section communicating said chamber means with outlets forming said plurality of jet orifices for emitting dye onto the moving material.

3,942,343

APPARATUS FOR DYEING AND PRINTING MATERIALS HAVING IMPROVED DYE RECIRCULATION MEANS

Norman E. Klein, Inman, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed May 17, 1974, Ser. No. 471,111
Int. Cl.² D06B 1/02
U.S. Cl. 68—205 R 5 Claims

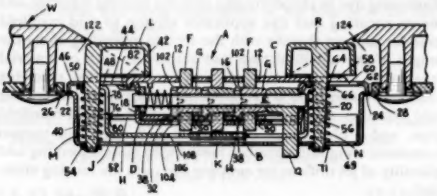


1. In apparatus for applying dye to a moving material including means for moving a material to be dyed in a path of treatment, at least one elongate dye jet gun bar positioned adjacent the path and having a row of dye-emitting orifices spaced along the bar for directing dye in plural streams onto the material, means positioned to one side of said row of orifices for selectively deflecting one or more of the dye streams emitted by the orifices away from the path of material treatment, and a dye collection trough positioned along the other side of said row of orifices and having an elongate opening extending along the row of orifices adjacent thereto for receiving the deflected dye from said plural streams therein; the improvement wherein said dye collection trough includes an elongate movable plate having an elongate edge defining the elongate boundary of said opening which is remote from said dye-emitting orifices, and camming means mounting said plate to said trough for sliding movement along said collection trough to variably position the edge of the plate relative to the dye orifices and dye streams directed therefrom, whereby collection of dye deflected from said streams is facilitated.

3,942,344
COMBINATION LOCK

Charles S. Gehrie, Montclair, and Irving Feinberg, Saddle Brook, both of N.J., assignors to Presto Lock Company, Division of Walter Kidde & Company, Inc., Elmwood Park, N.J.

Filed Nov. 5, 1974, Ser. No. 521,043
Int. Cl.² E05B 65/52, 37/02
U.S. Cl. 70—70 **19 Claims**



1. A combination lock comprising:

a plurality of dials supported for rotation about a longitudinal axis, each dial having sleeve means associated therewith;

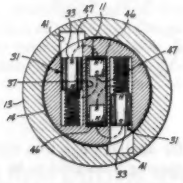
a plug member supported for movement longitudinally between first and second positions, the sleeve means having means cooperable with the plug member for releasably locking the plug member in said first position when the dials are off combination; and

a manually operable latch member longitudinally movable with respect to the plug member to a latching position and an unlatching position, the latch member and the plug member having engageable means for preventing movement of the latch member to unlatching position when the plug member is locked in the first position.

3,942,345
KEY OPERATED MAGNETIC TUMBLER LOCK

Takashi Sasahara, Tokyo, Japan, assignor to Japan Magnetic Lock Co., Ltd., Kawasaki, Japan

Filed Nov. 4, 1974, Ser. No. 520,295
Claims priority, application Japan, Nov. 24, 1973, 48-131187
Int. Cl.² E05B 47/00, 27/00
U.S. Cl. 70—276 **9 Claims**



1. In a key operated magnetic tumbler lock of the type including an outer hollow cylinder, an inner cylinder mated for coaxial relative rotation inside said outer cylinder and having an elongate keyway extending substantially parallel to the axis of said inner cylinder, a plurality of magnetic tumbler assemblies carried in said inner cylinder and a corresponding plurality of cooperating detents provided on an inner surface of said outer cylinder for selectively locking and unlocking said relative rotation therebetween, and a key carrying a plurality of magnetic members for insertion in said keyway for magnetically causing the disengagement of said associated magnetic tumbler assemblies and cooperating detents to unlock said cylinders, the improvement comprising:

elongate tumbler receiving guides disposed in said inner cylinder and extended transversely to and in juxtaposition with said keyway;

said magnetic tumbler assemblies each including a magnetic tumbler and biasing spring mounted in individual ones of said tumbler guides for longitudinal slideable reciprocation of said tumblers between a protracted condition engaging said detents and a retracted condition juxtaposed said keyway, said biasing springs continuously urging said tumblers toward said protracted condition, said magnetic tumblers each defining a magnetic polar axis and being disposed with said polar axes substantially longitudinally aligned with the longitudinal dimension of said guides;

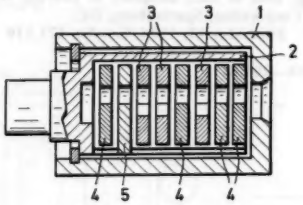
said detents being provided on an inner surface of said outer hollow cylinder in cooperating registration with said tumblers in their protracted condition for locking said relative rotation of said cylinders; and

said members of said key each defining a magnetic polar axis and being oriented such that when said key has been inserted in said keyway said members are disposed with their polar axes in substantial parallel juxtaposition and in polar opposition to the polar axes of said tumblers to slideably withdraw said tumblers to said retracted condition.

3,942,346
DISC CYLINDER LOCK

Reijo Luotolainen, Alahonkajoki, Finland, assignor to Oy Wartsila Ab, Helsinki, Finland

Filed Nov. 12, 1974, Ser. No. 523,061
Claims priority, application Finland, Nov. 16, 1973, 3548/73
Int. Cl.² E05B 29/02, 15/14
U.S. Cl. 70—366 **5 Claims**



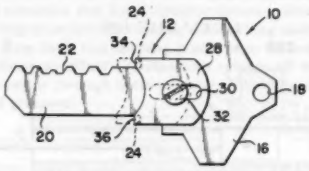
1. A disc cylinder lock comprising a number of turnable locking discs, which by turning of the key of the lock are turned from an initial position to a position releasing the lock mechanism, there being, in the central part of some of the locking discs, an opening having portions between which there are at least two substantially radial steps one, of which portions is arranged to receive the key of the lock and the other, when the key is properly inserted in the lock, forming, at the side of the inserted part of said key, a free space with a curved border, into which said key does not move in any of the functional phases of the lock, there being further, in the lock in front of said last mentioned locking discs, at least one turnable element having in its central part an opening for said key, which opening is so formed that its border, at the point where its distance from the turning axis of said locking discs is the smallest, is located within an area including said turning axis, the space between said turning axis and the opposite border of said opening and an area in the immediate vicinity of said turning axis remote from said opposite border of said opening.

3,942,347

KEY LOCATING ATTACHMENT FOR CONTROLLING THE DEPTH OF PENETRATION OF A KEY INTO A LOCK

Marvin Witham Coleman, 4038 Poplar St., Fairfax, Va. 22030

Filed Oct. 29, 1974, Ser. No. 518,741
Int. Cl.² E05B *19/04*
U.S. Cl. 70—395 7 Claims



1. In a key having a head portion, shoulder and shank portion, an attachment to vary the working depth of the key in a cylinder lock, said attachment including:

a. a key locating member,

b. said key locating member comprising a flat plate engaged with a face of the key head portion,

c. said flat plate being provided with a longitudinal slot, and

d. a set screw having a shank extending through the longitudinal slot of said flat plate into threaded engagement with the head portion of the key for securing the flat plate to the key and permitting adjustment of the position of the flat plate with respect to the key,

e. portions of said flat plate proximate the shank of the key being extended to provide flanges which are spaced apart a distance approximately substantially equal to the width of the shank of the key,

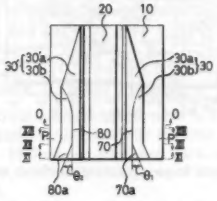
f. said flanges being bent at approximately a right angle to said flat plate, and positioned in alignment with, and in advance of, the shoulder of the key.

3,942,348

CUTTER DIES FOR THE CROSS ROLLING MACHINE

Nobutaka Maeda, Hiroshima, and Hidehiko Tsukamoto, Saiki, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 15, 1974, Ser. No. 514,909
Claims priority, application Japan, Nov. 6, 1973, 48-124000
Int. Cl.² B21H *8/02*
U.S. Cl. 72—71 6 Claims



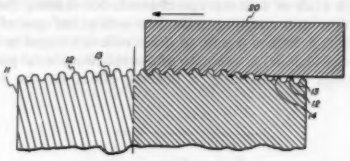
1. Cutter dies for cross rolling machines, each of said dies comprising a shaping surface, a finishing surface, a beginning portion, and an end portion, a first portion of said shaping surface having a width and height decreasing and increasing, respectively, along a portion of said cutter die from said beginning portion to a point near said end portion, and a second portion of said shaping surface having a width and height increasing and decreasing, respectively, along the portion of said cutter die from said point to said end portion.

3,942,349

CROWN DIE FOR THREAD ROLLING OF APPLICATOR ROLLS

Edward George Williams, Macedon, and Richard George LaBombard, Henrietta, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 30, 1974, Ser. No. 537,156
Int. Cl.² B21H *3/04*
U.S. Cl. 72—98 5 Claims



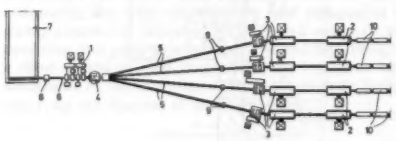
2. A thru feed thread rolling die for producing metal flow on the exterior surface of a cylindrical work piece to form a continuous, substantially uniform thread configuration comprising a roll formed with a substantially uniform external thread having a substantially uniform depth and having a variable crest diameter profile which is greater at some point intermediate of the die ends and smaller at the die ends with a substantially uniform transition between the greater diameter and smaller diameter.

3,942,350

ROLLING MILL TRAIN FOR THE PRODUCTION OF WIRE

Hans Brauer, Leichlingen, and Paul Duepper, Dusseldorf-Oberkassel, both of Germany, assignors to Friedrich Kocks, Dusseldorf, Germany

Continuation of Ser. No. 459,215, April 8, 1974, abandoned.
This application May 15, 1975, Ser. No. 577,857
Int. Cl.² B21B *1/18*
U.S. Cl. 72—228 1 Claim



1. Rolling mill train for use in the production of wire from billets of regular and refined steels, comprising a single-core roughing train arranged to receive a square billet of approximately 140 mm on a side from a billet furnce and to transform the billet into a square bar of about 85 mm on a side as it moves along a horizontal path, a plurality of single-core finishing trains spaced from said roughing train and said finishing trains arranged in parallel relationship and arranged to operate at an outlet speed of about 50 m/s, an intermediate train for each said finishing train located between said finishing train and said roughing train and arranged to operate at the same outlet speed as said finishing train, and means for distributing rolled material from said roughing train to said intermediate trains and for storing the rolled material which exceeds the capacity of said intermediate and finishing trains, wherein the improvement comprises that said means includes a distributor member located at the outlet from said roughing train and a plurality of rectilinear storage channels each associated with one of said intermediate trains and extending between said distributor member and its associated said intermediate train, at least one of said channels being spaced at an angle to said roughing train and to said intermediate train with which it is associated and adjacent said channels being spaced apart

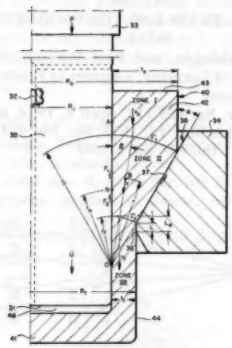
at an acute angle to one another, each said channel forming a heat insulated and heatable closed passage throughout the length thereof, each said intermediate train being arranged in a straight line and located immediately adjacent to and in rectilinear alignment with said finishing train with which it is associated so that the rolled material from each said storage channel can be fed through the associated said intermediate train and finishing train for forming finished wires, said distributor member being displaceable about a vertical axis for alignment with each of said storage channels for feeding the bar issuing from said roughing train into a selected one of said storage channels, and a pair of drive rollers located in each said storage channel in the path of the rolled material passing therethrough for providing a braking effect on the rolled material.

3,942,351

MANUFACTURE OF HOLLOW WORKPIECES

Betzalel Avitzur, 817 N. 31st St., Allentown, Pa. 18104

Filed Sept. 26, 1974, Ser. No. 509,547
Int. Cl.² B21C 23/14, 35/00
U.S. Cl. 72—271 17 Claims



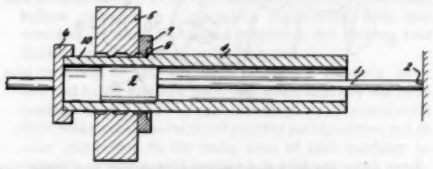
1. In a method of making a hollow workpiece with the aid of a punch and a die having an aperture extending therethrough; the steps of providing said workpiece with a side wall; causing said punch to engage the interior of said hollow workpiece so that the latter is positioned on said punch; causing movement of said punch with said workpiece thereon relative to said die and into said aperture thereof at an operational speed to iron said workpiece and thereby reduce the thickness and increase the length of said side wall while subjecting said workpiece to a relatively large frictional force at said punch, and a smaller frictional force at said die; forcing said workpiece to leave said die at a speed exceeding said operational speed of the punch so as to cause forward slip of the ironed portion of said workpiece with respect to said punch; and controlling said forward slip of the ironed portion.

3,942,352

METHOD OF MAKING SEAMLESS METAL TUBES

Walter Langhans, Langenhagen; Otto Uhlmann, Burgdorf, and Norbert Stephan, Ahlem, all of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte AG, Hannover, Germany

Filed Oct. 29, 1974, Ser. No. 518,815
Claims priority, application Germany, Oct. 20, 1973, 2352746
Int. Cl.² B21C 1/00
U.S. Cl. 72—275 6 Claims



1. In a method of making seamless tubes or pipes which have been made by extruding or piercing metal billets, the improvement comprising:

turning a pipe at its end to obtain a relatively short end portion of exact concentricity of its outer dimensions with regard to the inner dimensions of the pipe;

drawing the pipe through a positioning die and over a mandrel which is concentrically arranged to the die, beginning with the turned end;

said mandrel centering, positioning and supporting the interior of the pipe also in relation to a concentric peeling and scraping tool disposed radially adjacent to the mandrel, outside of the pipe; and

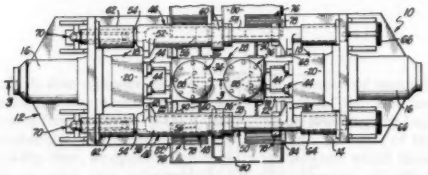
peeling and scraping at least a portion of the outer surface of the pipe by means of said tool, ahead of the die and adjacent to the mandrel.

3,942,353

HIGH ENERGY RATE COUNTERBLOW FORMING MACHINE

Josef K. Murek, 4454 Casitas Ave., San Diego, Calif. 92107

Continuation-in-part of Ser. No. 386,871, Aug. 9, 1973, abandoned, which is a continuation of Ser. No. 247,096, April 24, 1972, abandoned. This application Aug. 22, 1974, Ser. No. 499,569
Int. Cl.² B21J 7/28
U.S. Cl. 72—354 33 Claims



1. A high energy rate impact forming machine, comprising:

a frame,

forming means including a pair of coaxial forming rams,

pressure chambers on said frame receiving said rams for extension and retraction of the rams along their common axis toward one another through working strokes to extended positions by fluid pressure in said chambers and away from one another through return strokes to cocked positions,

ram retractor means on said frame for retracting said rams to cocked position, and

ram locking means on said frame including a pair of ram locking members, means supporting said members for movement to ram latching positions wherein said locking

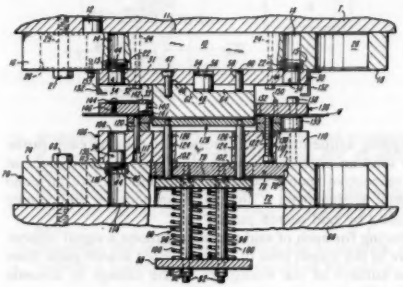
members are disposed for latching engagement with said rams, respectively, when the rams are in their cocked positions for locking said rams in said cocked positions and for movement of said locking members to ram releasing positions wherein said locking members are disposed for complete disengagement from said rams to release said rams for free independent movement through their working strokes without movement of said locking members with said rams, and common ram lock actuator means connected to said locking members for moving said locking members in unison from their ram latching positions to their ram releasing positions to effect simultaneous release of said rams for movement through their working strokes by said chamber fluid pressure.

3,942,354

DIE UNIT WITH QUICK CHANGE FEATURES

Allan E. Randolph, Sr., Kettering, Ohio, assignor to Dayton Progress Corporation, Dayton, Ohio

Filed Nov. 14, 1974, Ser. No. 523,814
Int. Cl.² B21J *13/00*
U.S. Cl. 72—448 **26 Claims**



1. For use in a die system, a die half including a die shoe having a through opening, means peripherally of the opening being configured to support a carrier plate, a carrier plate received in said opening, a sub-plate superposing on said die shoe and confining said carrier plate in said opening, a pressure plate overlying said sub-plate and reciprocable relative thereto, means on said sub-plate in a generally surrounding relation to said pressure plate and defining a die sperture, a pressure cell suspended from said carrier plate and depending therefrom to position at least a portion thereof within said opening, said cell including a spring pressed platform located in an underlying relation to said carrier plate, and means based on said platform and extending through said carrier plate and said sub-plate into a supporting relation to said pressure plate.

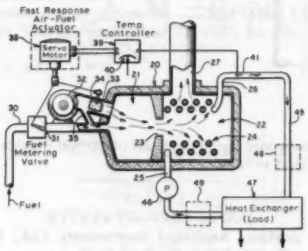
3,942,355

HOT WATER GENERATOR AND METHOD FOR SHOCK TESTING FABRICATED PIPING COMPONENTS

Michael J. McInerney, Highland Park, and Robert T. Brady, Elmhurst, both of Ill., assignors to Vapor Corporation, Chicago, Ill.

Division of Ser. No. 437,249, Jan. 28, 1974, Pat. No. 3,890,936. This application Sept. 13, 1974, Ser. No. 505,654
Int. Cl.² G01N *25/00*
U.S. Cl. 73—15 R **4 Claims**

1. A method of thermal shock testing a high performance fabricated piping component by subjecting the component to a rapid water temperature rise without nucleation, wherein the method includes use of a hot water generator having a high turndown ratio for rapidly increasing the temperature of hot water to a point of substantially theoretical maximum heat absorption and temperature rise without nucleation, wherein the generator includes a housing defining connected coil and combustor sections, a coil in the coil section with an open central area for receiving combustion gases and defining a water flow path, an inlet and an outlet for said coil, piping connected between the inlet and outlet defining a closed loop water path, a load in the piping, a pump in the piping forcing constant water circulation through the closed loop, a fuel and air induction system including fuel and air controls coacting to deliver the proper mixture of fuel and air to the combustor section, said fuel and air induction system including a fuel line delivering fuel to the combustor section, a combustion air line delivering combustion air to the combustor section, and means continually bleeding air directly into the fuel line to



maintain stable combustion in the combustor section at minimum fire conditions, a fast response actuator for said fuel and air controls, and a temperature controller providing operating signals to he actuator in response to a set point temperature and the water temperature of the coil outlet to operate the fuel and air controls and cause a rapid rate of temperature rise in the outlet water temperature without nucleation, said method comprising the steps of mounting said component in said piping connected between the inlet and outlet of the coil, operating said generator between low and high firing rates in a short period of time to produce the maximum heat flux absorbable by the load without incurring nucleate boiling, and observing the function of said component.

3,942,356

ON-LINE CARBON DIOXIDE ANALYZER AND ANALYZING METHOD

Richard Alan Branscombe, and Arthur Caputi, Jr., both of Modesto, Calif., assignors to E. & J. Gallo Winery, Modesto, Calif.

Filed Sept. 30, 1974, Ser. No. 510,812
Int. Cl.² G01N *7/00*
U.S. Cl. 73—19 **13 Claims**

1. A method of determining the amount of carbon dioxide present in a continuously supplied liquid containing dissolved carbon dioxide comprising the steps of:

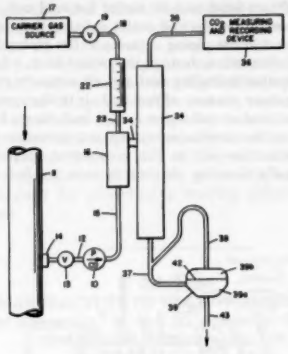
a. generating a constant flow sidestream of said continuously supplied liquid;

b. generating a continuous flow of a gas which dissolves carbon dioxide;

c. in the presence of said gas ejecting said sidestream into a confined volume under the influence of a pressure differential sufficient to cause substantially instantaneous and substantially complete evolution of carbon dioxide from said liquid leaving said liquid substantially depleted of carbon dioxide;

d. conducting the evolved carbon dioxide and said gas to a carbon dioxide measuring station and at said station

measuring the amount of carbon dioxide in the combination of said gas with said carbon dioxide; and



e. draining said liquid depleted of carbon dioxide from said confined volume.

3,942,357

INSPECTION APPARATUS

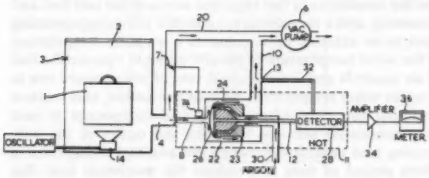
Anthony Jenkins, Analytical Instruments Ltd., Fowlmere, Royston, Hertfordshire, England

Filed July 15, 1974, Ser. No. 488,536

Claims priority, application United Kingdom, May 2, 1974, 19207/74

Int. Cl.[2] G01N *33/22*

U.S. Cl. 73—23 10 Claims



1. Apparatus for checking the contents of closed containers for the presence of substances which are capable of emitting vapours comprising a compartment to receive the containers, means to promote the rapid diffusion of vapours out of the container into the compartment, a detector assembly sensitive to the presence of the vapours and connected to said compartment by a flow path so as to receive at least a proportion of the vapours diffusing into the compartment, means selectively permeable to the vapours and located in the flow path to the detector assembly, and means for maintaining the selectively permeable means at a constant temperature.

3,942,358

METHOD AND APPARATUS FOR ADJUSTING DEFECT GATE IN ULTRASONIC PULSE-ECHO TESTING

Wilfried Pies, Erftstadt-Bliesheim, Germany, assignor to Krautkramer-Branson, Incorporated, Stamford, Conn.

Filed Apr. 29, 1975, Ser. No. 572,880

Claims priority, application Germany, May 9, 1974, 2422439

Int. Cl.[2] G01N *29/04*

U.S. Cl. 73—67.7 23 Claims

7. The method of ultrasonic testing a workpiece by the pulse-echo technique comprising:

providing a plurality of spaced transducer probes for transmitting ultrasonic energy into the workpiece in a direction across its thickness;

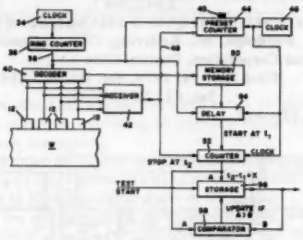
coupling respectively first surface locations of the workpiece to said probes;

energizing sequentially said probes for causing each probe to send an ultrasonic search pulse into the workpiece at a respective such location and to receive an echo signal arising from a change in acoustic impedance sensed by said pulse;

producing for each of said locations a signal responsive to the transit time of the associated search pulse from the surface of the workpiece to the change in acoustic impedance;

comparing said signals and storing a digital signal corresponding to the longest transit time;

coupling subsequently respective second locations of the workpiece to said probes;



energizing sequentially said probes for causing each probe to send an ultrasonic search pulse into the workpiece at a respective such second location and receive an echo signal arising from a change in an acoustic impedance sensed by said search pulse;

producing for each of said second locations a signal responsive to the transit time of the associated search pulse from the surface of the workpiece to the change in acoustic impedance;

updating the stored digital signal in dependence upon the transit time responsive signals produced at said second locations by comparing said last stated signals with the stored signal and changing the stored signal by predetermined increments or decrements, and

utilizing the updated stored signal for terminating the defect gate in a flaw detector circuit.

3,942,359

METHOD AND APPARATUS FOR MEASURING KNOCKING IN INTERNAL COMBUSTION ENGINES

Virgilio Arrigoni, San Donato Milanese; Bruno Gaetani, and Pietro Ghezzi, both of Milan, all of Italy, assignors to Snamprogetti S.p.A., San Donato Milanese, Italy

Continuation-in-part of Ser. No. 182,673, Sept. 22, 1971, abandoned. This application Nov. 8, 1974, Ser. No. 522,272

Claims priority, application Italy, Sept. 22, 1970, 30020/70

Int. Cl.[2] G01L *23/22*

U.S. Cl. 73—35 5 Claims

1. A method for quantitatively measuring the knocking in an internal combustion engine, comprising the steps of:

a. sensing engine vibration;

b. generating electrical signals corresponding to engine vibration;

c. filtering the generated electrical signals to pass a predetermined band of signals;

d. transmitting the filtered signals to one input of a coincident gate;

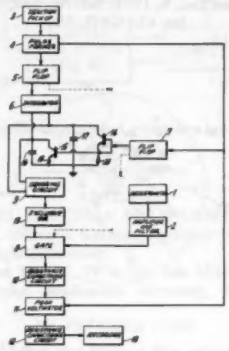
e. sensing ignition signals applied to the engine;

f. generating pulses corresponding to each ignition signal applied to the engine;

g. integrating the generated pulses to provide signals inversely proportional to the velocity of the crankshaft of the engine;

h. transmitting the integrated signals of a pair of capacitors having different discharge rates for charging the same;

i. discharging the capacitors at constant currents and different rates to provide a coincident signal to another input of the coincident gate only during the time period between complete discharge of one capacitor and complete discharge of the other capacitor, the time period commencing at the highest pressure point and terminating at a crankshaft angle of between about 60° to about 80° beyond the highest pressure point;



j. passing engine vibration signals through the coincident gate only during the coincidence of signals at its inputs; and

k. detecting the output signals from the coincident gate to provide a quantitative measurement of knocking.

3,942,360

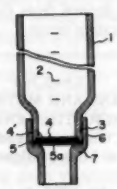
METHOD AND APPARATUS FOR MEASURING THE DEGREE OF CONTAMINATION OF LIQUIDS

Yoneji Wada, Fukuoka, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 11, 1974, Ser. No. 450,245

Int. Cl.² G01N *15/00*

U.S. Cl. 73—61 R **1 Claim**



1. Apparatus for measuring the degree of contamination of liquids comprising a filter having a container for accommodating a definite volume of a liquid containing contaminants and a stack of a plurality of sheets of filter paper contained in said container, the pore size of said sheets of filter paper decreasing from the first to succeeding sheets in the direction in which the liquid passes therethrough; and a measuring device having a source of light having a definite wavelength and directed against the first and succeeding sheets of filter paper respectively having contaminants with different particle sizes thereon and which have been removed from said filter for irradiating said sheets, photoelectric converting elements positioned to receive light reflected from said sheets of filter paper and responsive to the light reflected by said first and succeeding sheets of filter paper respectively for producing electric signals proportional to the quantities of the contaminants deposited on said first and succeeding sheets of filter paper respectively, and a bridge circuit connected to said converting elements for comparing said electric signals with each other and producing a differential output signal corresponding to the concentration and the particle size of said contaminants.

3,942,361

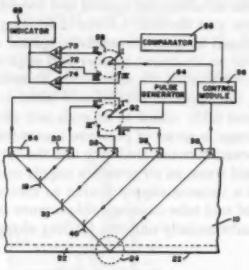
ARRANGEMENT FOR TESTING THICK-WALLED SPECIMENS BY THE ULTRASONIC PULSE-ECHO METHOD

Walter Rath, Turnich, and Rudolf Worschech, Hamburg, both of Germany, assignors to Krautkramer-Branson, Incorporated, Stratford, Conn.

Continuation-in-part of Ser. No. 353,321, April 23, 1973, abandoned. This application Nov. 21, 1973, Ser. No. 418,134

Int. Cl.² G01N *29/04*

U.S. Cl. 73—67.7 **10 Claims**



1. An apparatus for testing thick-walled specimens by the ultrasonic pulse-echo method comprising:

at least a pair of directional transmitting probes and a directional receiving probe adapted respectively to transmit and receive ultrasonic signals along their directional axes;

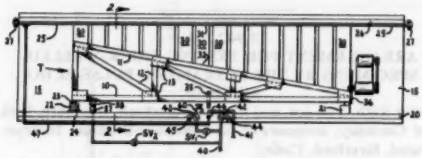
said transmitting probes arranged in spaced aligned relation along one surface of a specimen and oriented thereon to direct ultrasonic signals transmitted by each probe along oblique substantially parallel paths toward a different one of a corresponding plurality of depth zones arranged in staggered relation to each other across the thickness of the specimen with the respective centers of said zones disposed along a common line defining the path of ultrasonic signals reflected in response to defects in said depth zones disposed substantially perpendicular to said one surface of the specimen;

said common line intersecting the opposite surface of the specimen at a first given location thereon at which such defect responsive ultrasonic signals are reflected across the thickness of said specimen to said one surface thereof along a common path that intersects said one surface at a second given location in spaced alignment with said transmitting probes at the side thereof remote from the initial paths of said transmitted ultrasonic signals,

said receiving probe being disposed at said second given location on said one surface of the specimen with its directional axis oriented to receive said ultrasonic signals reflected along said common path from said first given location at the opposite surface of the specimen; and

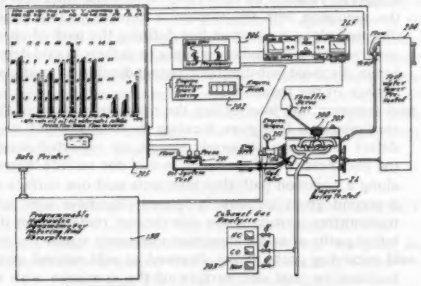
electrical circuit means coupled to said receiving probe for sensing the reception by said receiving probe of said defect responsive signals reflected from said first given location along said common path from any of said transmitting probes that is transmitting and for producing electrical signals representative thereof.

3,942,362
ROOF TRUSS TESTING MACHINE
James R. Keller, 1410 NE. Marine Drive, Portland, Oreg. 97211
Filed Aug. 12, 1974, Ser. No. 496,528
Int. Cl.² G01N 3/08
U.S. Cl. 73—88 R 14 Claims



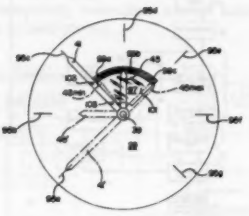
1. A truss testing machine comprising a table adapted to support a truss lying on it side, upstanding abutment flange means on one side of said table, an abutment block on said table arranged to bear horizontally against said flange means and provide an abutment against one longitudinal edge of the truss at one end thereof, a force indicating load cell on said table arranged to bear horizontally against said flange means and provide an abutment against said edge of said truss at the opposite end thereof, an upstanding abutment flange extending along the opposite side of said table, a flattened flexible tube on said table sealed at its ends and extending along said second flange, a series of pressure transmitting blocks on said table disposed between said tube and the opposite longitudinal edge of said truss, an air pressure supply source to inflate said tube, and a vacuum supply source to evacuate said tube, the inflation of said tube causing said pressure transmitting blocks to apply substantially uniform loading along the length of the truss.

3,942,363
DRIVE-DYNAMOMETER SYSTEM
Philip E. Swis, Armada, and Glenn M. Brown, Royal Oak, both of Mich., assignors to The Cross Company, Fraser, Mich.
Continuation-in-part of Ser. No. 464,061, April 25, 1974, abandoned, which is a division of Ser. No. 363,054, May 23, 1973, Pat. No. 3,834,221. This application Feb. 28, 1975, Ser. No. 553,920
Int. Cl.² G01L 3/20
U.S. Cl. 73—116 13 Claims



10. In a test stand for vehicle engines, means supporting an engine to be tested, and a hydrostatic system comprising a fixed displacement motor unit and a variable displacement pump unit, one of said units being connected to the engine crankshaft and the other spaced from the first unit and having motive means for driving it, said system being a closed hydraulic loop system connecting said motor and pump whereby the engine may be selectively cold-tested or hot-tested, the motor during hot-testing acting as a pump and the pump acting as a motor, means for adjusting the displacement of said pump, and a control loop system for said pump adjusting means to simulate different load or inertia conditions.

3,942,364
ENGINE EFFICIENCY INDICATOR
Homer S. Bunker, 901 Martha Cove, Memphis, Tenn. 38122
Filed Dec. 9, 1974, Ser. No. 530,726
Int. Cl.² G01L 3/26
U.S. Cl. 73—115 13 Claims



1. In combination with a speed rate indicator means for a vehicle having a throttle and intake manifold and incorporating a first visual indicator for said means, an engine efficiency indicator means for revealing within limits the operating efficiency of the vehicle internal combustion engine, said engine efficiency indicator means being pivotally mounted with respect to said speed rate indicator means, said engine efficiency indicator means including a second visual indicator normally pivoted a select degree by movement of said first visual indicator regardless of the vehicle speed when the operating engine is within a predetermined efficiently functioning range, pressure sensing means responsive to the intake manifold vacuum of the engine for sensing changes in the magnitude of its vacuum normally brought about by various settings of the throttle, shifter means operatively associated with said speed rate indicator means and normally maintaining said second visual indicator pivoted to the select degree with respect to said first visual indicator, said shifter means being responsive to the said pressure sensing means and capable of displacing said second visual indicator from its normally fixed position with respect to said first visual indicator for displaying when the operating engine departs from the limits of its predetermined efficiently operating range.

3,942,365
POWER TEST MEANS AND METHOD FOR INTERNAL COMBUSTION ENGINES
Richard Eric Hanson, Winchester, and Thomas Edward Nolan, Jr., Medfield, both of Mass., assignors to RCA Corporation, New York, N.Y.
Filed Apr. 21, 1975, Ser. No. 569,857
Int. Cl.² G01M 15/00
U.S. Cl. 73—116 12 Claims

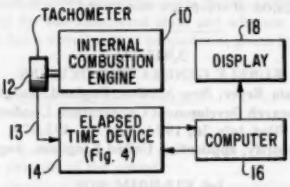
1. Means for testing the power of an internal combustion engine during a full-throttle acceleration of the engine, comprising

tachometer means coupled to said engine to generate one electrical pulse per engine cycle of the engine,

a display device, and

a computer means receptive to the output of said tachometer and providing an output to said display device, said computer means being programmed to measure the time periods between successive pulses, each time period constituting the reciprocal of the engine speed during the particular engine cycle, and being programmed to add one-half of the time period corresponding with a low

speed and one-half of the time period corresponding with a high speed to the intermediate time periods to compute



an acceleration time period which is a measure of engine power.

3,942,366

FUEL INJECTION ARRANGEMENT

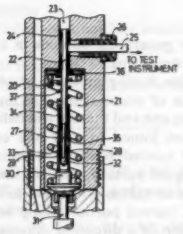
Karl Hofmann, Aldingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 15, 1974, Ser. No. 433,454

Claims priority, application Germany, Feb. 2, 1973, 2305114

Int. Cl.² G01M *15/00*

U.S. Cl. 73—119 A **4 Claims**



2. In a fuel injection arrangement for internal combustion engines which includes a fuel injection nozzle normally closed by an axially movable needle valve resting on its seat, the improvement comprising electrical switch means serving as a sensor for a test instrument, coupled to said needle valve and responsive to lifting of said needle valve, a nozzle holder and a fuel leakage channel means, and wherein said switch means includes a yielding piston disposed in said channel means and a spring member loading said piston, said piston when displaced interrupting electrical circuit continuity between said nozzle holder and said test instrument.

3,942,367

TRANSPORT TORQUE AND TENSION MEASUREMENT DEVICE

Arden Ronald Thompson, River Falls, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

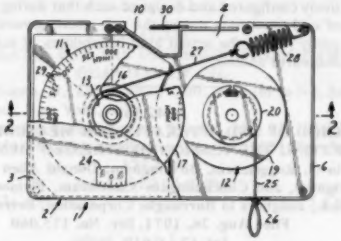
Filed Jan. 30, 1975, Ser. No. 545,411

Int. Cl.² G01L *3/18, 5/12*

U.S. Cl. 73—134 **3 Claims**

1. A cartridge for measuring rewind torque and brake tensions of a video magnetic tape record/reproduce unit and having a housing in which at least a first reel is rotatably disposed in registration with an aperture in one of the side walls of said housing in order that when said cartridge is loaded in a video record/reproduce unit, said reel can be driven by said unit, said cartridge comprising:

a cord wrapped about said reel in a direction opposite to that in which said reel is rotated when said record/reproduce unit is actuated in a rewind mode, such cord having a free end disposed through an opening in said housing so that a determinable pressure may be exerted



on said cord for opposing rewind rotation of said reel or overcoming brake force on the same.

3,942,368

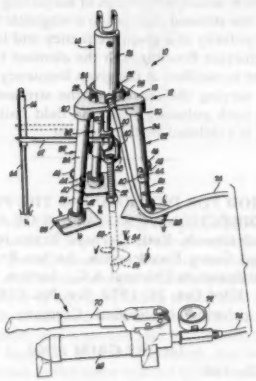
PORTABLE PULL TESTING UNIT FOR INSTALLED EARTH ANCHORS

Robert M. Hoyt, Centralia, Mo., assignor to A. B. Chance Company, Centralia, Mo.

Filed Sept. 9, 1974, Ser. No. 504,080

Int. Cl.² G01L *5/00*; G01N *3/10*

U.S. Cl. 73—141 R **7 Claims**



1. In combination:

an earth anchor embedded into the earth for anchoring a mobile home or the like and having an elongated shaft with one end thereof protruding from the earth and a generally tranversely extending, loadbearing member adjacent the remaining, embedded end of said shaft;

pull-testing apparatus, including

selectively actuatable tensioning means positioned generally above the protruding end of said shaft for applying an upwardly directed tension force on said anchor in opposition to said load-bearing member;

means operatively coupling said tensioning means and protruding end;

means supporting said tensioning means including a plurality of generally upright, closely spaced support legs each having an earth-engaging, force-spreading foot pad on the lowermost end thereof which are each positioned closely adjacent the protruding end of said earth anchor shaft;

means for determining the extent of tension forces exerted on said anchor when the tensioning means is actuated; and

means for measuring the extent of upward anchor creepage when said tensioning means is actuated and indepen-

dently of any settling of the pull-testing apparatus into the earth,

said earth anchor and pull-testing apparatus being cooperatively configured and designed such that during actuation of said tensioning means the test results generated accurately reflect the actual load capabilities of said embedded earth anchor.

3,942,369

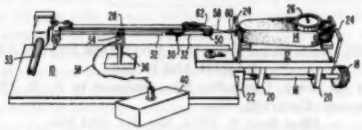
METHOD OF AND APPARATUS FOR MEASURING AND SETTING THE TENSION OF STRESSED MEMBERS

Edwin O. Roggenstein, Birmingham; Donald Allen Andrews, Brighton, and Chockalingam Manthiram, Plymouth, all of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 26, 1971, Ser. No. 175,060

Int. Cl.² G01N 29/00

U.S. Cl. 73—143 10 Claims



1. The method of setting a stressed element at a desired tension which includes the steps of subjecting an intermediate portion of the stressed element to a magnetic flux field pulsating in one polarity at a given frequency and in the absence of electrical current flow through the element thereby to cause the element to oscillate at the given frequency of the magnetic field, and varying the tension of the stressed element while subject to such pulsating magnetic field until a condition of resonance is exhibited by the element.

3,942,370

METHOD FOR DETERMINING THE PREFERRED DIRECTION OF ROTATION OF A TIRE

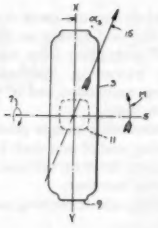
Karl Alfred Grosch, Rott; Gerhard Franz-Josef Senger, Aachen, and Georg Freudenstein, Aachen-Brand, all of Germany, assignors to Uniroyal A.G., Aachen, Germany

Filed Oct. 25, 1974, Ser. No. 518,025

Claims priority, application Germany, Nov. 6, 1973, 2355387

Int. Cl.² G01M 17/02

U.S. Cl. 73—146 4 Claims



1. A method for determining the preferred direction of rotation of a vehicle tire comprising the steps of:

determining the direction of rotation of the tire in which the angular difference between the slip angle of the tire due to the lateral structural force acting on the tire and the slip angle of the tire due to the self-aligning torque acting on the tire is smaller; and

marking the tire in a manner indicating the direction of rotation in which said angular difference is smaller,

whereby the tire may be mounted on a vehicle so that the conventionally forward direction of rotation of the tire is in the direction of smaller angular difference whereby the effect of the forces acting on the tire which tend to alter its direction of travel are minimized.

3,942,371

BUBBLE GENERATING DEVICES

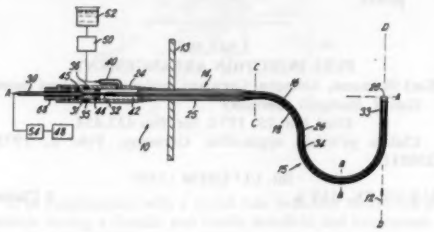
Denis William Bryer, New Malden, England, assignor to National Research Development Corporation, London, England

Filed July 26, 1974, Ser. No. 492,970

Claims priority, application United Kingdom, Aug. 1, 1973, 36491/73

Int. Cl.² G01M 9/00

U.S. Cl. 73—147 8 Claims



1. A device for generating bubbles in a direction of fluid flow, the device comprising:

a support portion having an inlet adapted to be supplied from a source of material used in forming bubbles and having at least one end thereof a substantially linear axis;

a curved portion joined to said one end of the support portion, said curved portion, with increasing distance from the support portion, bending away from and then back towards an extension of said axis from the support portion, said curved portion being bent away from the support portion in a direction opposite that of the fluid flow; and

at least one passage within the support and curved portions, said passage extending from the inlet of said support portion to an outlet port from the curved portion.

3,942,372

PROCEDURE FOR MAKING TESTS OF PROPELLER CAVITATION

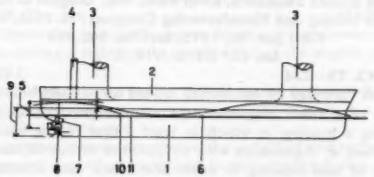
Ramon Ruiz-Fornells Gonzalez; Gonzalo Perez Gomez, and Jesus Vivanco Sanchez, all of Madrid, Spain, assignors to Astilleros Espanoles, W.A., Madrid, Spain

Filed June 18, 1974, Ser. No. 480,519

Claims priority, application Spain, Mar. 14, 1973, 424286

Int. Cl.² G01M 10/00

U.S. Cl. 73—148 11 Claims



1. A method of visualizing cavitation phenomena produced by the propeller of a vessel, comprising mounting a scale model propeller on a corresponding reduced scale model of

the associated ship, driving said scale model ship under ordinary atmospheric pressure conditions through a body of water open to atmosphere at a speed $(V_A)_m$ and simultaneously operating the scale model propeller at a rate n_m such that the same cavitation index σ and the same thrust coefficient K_T are obtained as for the associated ship, and wherein said cavitation index for a vessel with a propeller is given by

$$\sigma = \frac{(T + o - E)\,1026 + 10100}{V^4 \rho\, n^2\, D^2}$$

where

T is the draught of the vessel

o is the elevation in the vertical of the propeller tips of the wave generated by the vessel

E is the height of the propeller shaft

V is the speed of the vessel

ρ is the water density

n is the number of revolutions per second of the propeller and

D is the diameter of the propeller, and wherein said thrust coefficient is given by

$$K_T = \frac{T}{\rho\, n^2\, D^4}$$

in which

T is the thrust

ρ is the water density

n is the number of revolutions per second of the propeller and

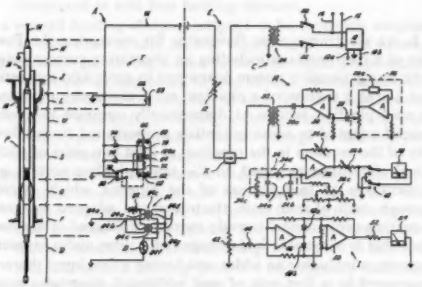
D is the propeller diameter

and observing the cavitation conditions in the region adjacent the scale model propeller.

3,942,373
WELL TOOL APPARATUS AND METHOD

Austin S. Rogers, Houston, Tex., assignor to Homco International, Inc., Houston, Tex.

Filed Apr. 29, 1974, Ser. No. 465,081
Int. Cl.² E21B *47/00*
U.S. Cl. 73—151 **26 Claims**



23. A method of testing pipe at a test location in a well bore to determine whether the pipe is stuck in a well bore, comprising the steps of:

a. mounting a sensor at the test location in the well bore;

b. moving the sensor up to a reference position in the test location from which movement of the sensor in response to movement of the pipe indicates whether the pipe is stuck;

c. causing a time delay to elapse during movement of the sensor to the reference position so that the sensor may assume the proper reference position for sensing operations;

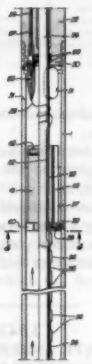
d. applying force to the pipe; and

e. sensing with the sensor whether the pipe moves when the force is applied thereto.

3,942,374
APPARATUS FOR THE DETERMINATION OF THE QUANTITY OF OIL

James J. Glenn, Jr., Long Beach, Calif., assignor to N L Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 731,445, May 23, 1968, Pat. No. 3,650,148. This application Aug. 19, 1971, Ser. No. 173,105
Int. Cl.² E21B *47/04*
U.S. Cl. 73—155 **5 Claims**



1. An oil well tool for determining the proportions of water and oil in an oil well, comprising: a sample chamber having inlet and outlet ports; means for trapping a sample of the liquid in the oil well in the sample chamber, said means for trapping said sample of liquid including rotary inlet and outlet valves operatively connected with the inlet and outlet ports of said sample chamber and a port in said tool means for directing the flow of liquid in said well through the inlet valve, sample chamber and outlet valve and out to the exterior of the tool; means in said tool connected with said valves to rotate said valves to close said valves simultaneously to trap a sample in said chamber and means to open said valves simultaneously to open a port to direct the flow to bypass said sample chamber, and means at the surface for determining in situ the relative proportions of oil and water in said trapped sample.

3,942,375
METHOD AND MEANS FOR TESTING HYDRAULIC PUMP

J. D. Shepherd, R.R. 2, P.O. Box 248, Lenos, Iowa 50851

Filed Oct. 11, 1974, Ser. No. 514,138
Int. Cl.² G01M *19/00*
U.S. Cl. 73—168 **8 Claims**

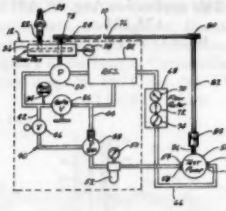
1. A device for testing a hydraulic pump having a charging inlet, a discharge outlet, and a rotor shaft, said device comprising:

a dynamometer comprising a drive shaft, a dynamometer pump, and means connecting said drive shaft to said dynamometer pump for driving said dynamometer pump, said dynamometer pump being hydraulically connected in a hydraulic circuit for pumping hydraulic fluid through said circuit in response to rotation of said drive shaft;

a tachometer connected to said drive shaft for measuring the rotational speed thereof;

a first conduit connected to said hydraulic circuit of said dynamometer, said first conduit having first coupling means thereon for coupling said conduit to said charging inlet of said test pump;

a second conduit connected to said dynamometer hydraulic circuit for returning fluid to said dynamometer circuit, said second conduit having a second coupling means for



connecting said second conduit to said discharge end of said test pump;

a flow rater connected to said second conduit and having gauges for registering the rate of flow of fluid in raid second conduit; and

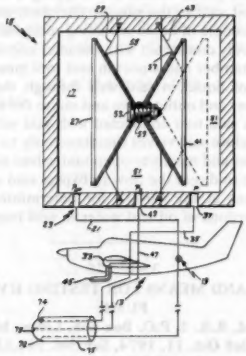
mechanism connected to said drive shaft of said dynamometer and having means adapted to be connected to said rotor shaft of said test pump for driving said test pump in response to rotation of said drive shaft of said dynamometer.

3,942,376

DIAPHRAGM TYPE ANGLE OF ATTACK INDICATOR

Roger W. Gallington, 505 Adelman Circle, S.W., Vienna, Va. 22180

Filed Aug. 14, 1974, Ser. No. 497,416
Int. Cl.² G01C *21/00*
U.S. Cl. 73—180 **5 Claims**



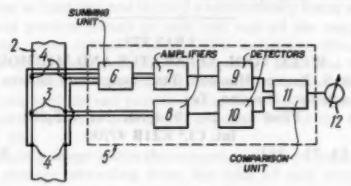
1. A diaphragm type angle of attack indicator for use as an aircraft instrument comprising, means for sensing three pressures on the aircraft, at least one of said three pressures varying strongly with angle of attack, another of said three pressures being greater than the other two pressures, tubing means for transmitting the pressures to a central area, and means at the central area for dividing the difference between the greatest pressure and one of the two lesser pressures by the difference between the greatest pressure and the other of the two lesser pressures, said dividing means including an enclosure having three operatively connected sections, pressure from a different point on the aircraft being transferred to each of the sections in said enclosure, the first of the sections being operatively connected to one of the two lesser pressures, the second of the sections being operatively connected to the other of the two lesser pressures, the third of the sections being operatively connected to the greatest pressure, a pair of rigid, members shaped as surfaces of revolution, one each being positioned in each of the first and second sections and having their apexes fixedly attached to each other, a pair of flexible plastic diaphragms positioned in the third section one each being in contact with the back surface of each of said rigid members, said flexible diaphragms effectively separating the third section from the first and second sections, such that changes in pressure in the first and second sections produces a lateral movement in said pair of rigid members, said movement corresponding to the difference in pressures at pressure points on the aircraft and to the angle of attack thereof.

3,942,377

ELECTROMAGNETIC FLOWMETER

Arkady Savelievich Ginzburg, ulitsa Moskovskaya 266, korpus 2, kv. 47; Genrikh Georgievich Gurevich, ulitsa Palangas 11, kv. 78; Generik Khaimovich Kirshtein, ulitsa Moskovskaya, 218, kv. 61; Igor Porfirievich Kvasnevsky, ulitsa Pavlova 17, kv. 59; Vladimir Ivanovich Yakushonok, ulitsa Auseklya 3, kv. 21, all of Riga, and Mikhail Naumovich Levin, ulitsa Boldyreva, 6, kv. 46, Kaliningrad Moskovskoi oblasti, all of U.S.S.R.

Filed July 27, 1973, Ser. No. 383,460
Int. Cl.² G01F *1/58*
U.S. Cl. 73—194 EM **3 Claims**



1. An electromagnetic flowmeter for measuring the flow rate of a fluid medium including an alternating current magnetic flux generating system positioned to apply said magnetic flux across a section of a pipeline; main electrodes mounted on said pipeline section at diametrically opposed locations thereof adapted to sense potentials proportional to the flow rate of the medium in the pipeline; at least two pairs of additional electrodes mounted on the same pipeline section on generatrixes of said section of the pipeline which extend through each of said main electrodes and adapted to sense potentials proportional to eddy currents produced in the medium due to magnetic field changes with time; and a measuring system including an adder unit having a first input thereof connected to a first pair of said additional electrodes positoned on a first of said generatrixes extending through one of said main electrodes and a second input thereof connected to a second pair of additional electrodes positioned on a second of said generatrixes extending through the other of said main electrodes; a first amplifier having the input thereof connected to said main electrodes; a first phase-sensitive detector adapted to discriminate a signal proportional to the flow rate of the medium having the input therof connected to the output of said first amplifier; a second amplifier having the input thereof connected to the output of said adder unit; a second phase-sensitive detector adapted to discriminate a signal proportional to eddy currents having the input thereof connected to the output of said second amplifier; and a comparator unit

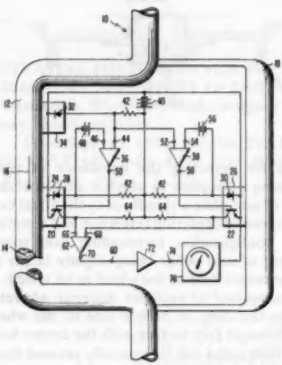
connected to the outputs of said first and second phase-sensitive detectors, said comparator unit being adapted to compare the signals from said main and additional electrodes and provide an indication of the flow rate of said medium.

3,942,378

FLUID FLOW MEASURING SYSTEM

John Aaron Olmstead, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 28, 1974, Ser. No. 484,093
Int. Cl.² G01F 1/68
U.S. Cl. 73—204 8 Claims



1. A fluid flow measuring system for measuring the rate of flow of a fluid in a first region of a conduit adapted to contain said fluid, said conduit including a second region therein wherein said fluid is substantially stationary, comprising:

a first heating element adapted to be thermally coupled to said fluid in said first region, said first heating element producing a first current signal proportional to the power dissipated in said first heating element,

a second heating element adapted to be thermally coupled to said fluid in said second region, said second heating element producing a second current signal proportional to the power dissipated in said second heating element,

means electrically connected to said first and said second heating elements, including a first potential source, for supplying a substantially constant voltage to said first and said second heating elements,

means including temperature sensitive elements thermally coupled respectively to said first heating element, to said second heating element, and to said flowing fluid entering said conduit thereby sensing the ambient temperature thereof, said means for controlling the current to said first and said second heating elements and thereby maintaining the temperature of both said first and said second heating elements at a constant number of degrees higher than the ambient temperature of said fluid,

circuit means connected to said first and said second heating elements for comparing said first and said second current signals to produce a difference signal proportional to the difference in power dissipation between said first and said second heating elements, and

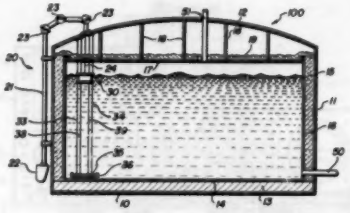
circuit means connected to said comparing means for squaring said difference signal to produce an output signal, said output signal being substantially linearly proportional to the rate of flow of said fluid in said first region and being substantially compensated for changes in the density of said fluid.

3,942,379

FLOATING WAVE STILLING CHAMBER FOR LIQUID LEVEL INDICATOR

Alfred Avery Kanzler, Downers Grove, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Jan. 17, 1975, Ser. No. 541,785
Int. Cl.² G01F 23/08
U.S. Cl. 73—311 16 Claims



1. A gage mechanism for determining the level of a liquid, comprising:

a measuring means joined to a liquid level indicating device;

a floating wave stilling chamber circumscribing the periphery of the liquid level indicating device, said stilling chamber having walls extending above wave action of the liquid, said floating stilling chamber having at least one opening in the top and in the bottom; and

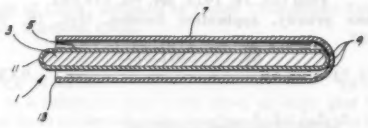
vertical guide means for controlling lateral movement of the chamber at all levels at which the liquid level is to be measured.

3,942,380

DIFFERENTIAL DISPLACEMENT THERMOSENSING DEVICE

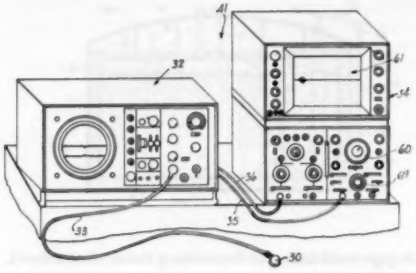
Roberto D. Lorenzo, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 8, 1974, Ser. No. 486,271
Int. Cl.² G01K 5/50
U.S. Cl. 73—362.3 4 Claims



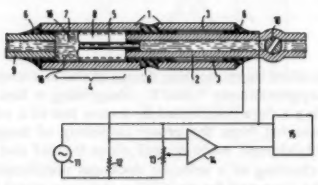
1. A temperature thermosensing device useful at a temperature above approximately 1,000°F. comprising a first rod member having a core constituted by a core rod of a refractory metal selected from the group consisting of tungsten, tantalum, molybdenum, niobium and alloys thereof and having a metal cladding of a selected thickness metallurgically bonded to the core rod for protecting the core metal from oxidation and for adapting the first member to undergo dimensional change of a selected degree in response to change in temperature, and a second tube member of a metal having a relatively greater coefficient of thermal expansion than the selected refractory core metal adapting the second member to undergo relatively greater dimensional change than the first member in response to said temperature change, the second member being disposed in spaced coaxial surrounding relation to the first member, the first member having a first end thereof secured to a corresponding first end of the second member and having its opposite end free to move relative to the corresponding opposite end of the second member as an indication of the temperature to which the device is subjected.

3,942,381
ULTRASONIC PRESSURE TEST METHOD AND APPARATUS
William G. Brown, 6379 Oakcreek Way, Citius Heights, Calif. 95610, and Lee C. Paxton, 5050 North Ave., Carmichael, Calif. 95608
Filed Jan. 29, 1974, Ser. No. 437,644
Int. Cl.² G01L 9/00
U.S. Cl. 73—398 R 2 Claims



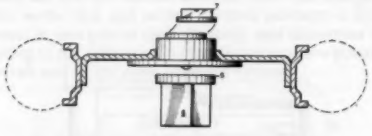
1. In an ultrasonic pressure testing apparatus, a reflectoscope, an oscilloscope, electrical circuit means electrically connecting said reflectoscope to said oscilloscope, an ultrasonic crystal providing a transducer, and electrical cable means connecting said transducer to said reflectoscope, said apparatus using ultrasonic sound to measure the pressure of gas in containers, and wherein when the transducer is placed against one side of a container a measurement is taken of the time required for an impulse of a high frequency sound wave to travel through the contents of the container, echo off the far side of the container, and return to the receiver transmitter crystal.

3,942,382
PRESSURE TRANSDUCER
Bertil Hok, Uppsala, Sweden, assignor to Siemens Aktiengesellschaft, Erlangen, Germany
Filed Oct. 16, 1974, Ser. No. 515,682
Claims priority, application Sweden, Oct. 18, 1973, 7314083
Int. Cl.² G01L 9/02
U.S. Cl. 73—398 AR 9 Claims



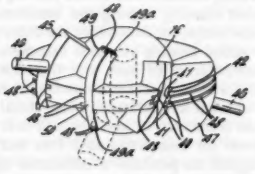
1. A pressure transducer for generating an electrical signal in conformance with a liquid pressure, said transducer comprising a measuring cell including a chamber partly filled with a liquid and the remaining part thereof with a gas entrapped in said chamber; a conduit filled with said liquid having one end thereof communicating with the liquid-filled part of the chamber of said measuring cell, said conduit having an open end remote from said measuring cell communicating with a fluid-filled vessel for measurement of the fluid pressure in the latter; tube means extending into said chamber connected to a source for supplying quantities of said liquid to said chamber; valve means for selectively restricting flow of liquid from said liquid supply source and for sealing said tube means, said gas volume in said chamber being varied responsive to the fluid pressure in said fluid vessel acting on the liquid in said conduit; and means in said transducer for generating an electrical value of a magnitude in conformance with the particular gas volume.

3,942,383
WHEEL BALANCING DEVICES
Jerome G. Schad, R.D. 1, Evans City, Pa. 16033
Filed Nov. 8, 1974, Ser. No. 522,263
Int. Cl.² G01M 1/14
U.S. Cl. 73—483 1 Claim



1. A device for detecting the imbalance of automobile wheels comprising a flat plate to which is affixed at the center of one surface of said plate a spindle of cyclindrical configuration for the purpose of centering reference and a mating collar of cylindrical configuration surrounding said spindle, the greater diameter of said collar being slightly larger than the diameter of the center hole of the wheel to be tested, and said collar being composed of resilient material whereby being introduced into the deep or hollow side of the wheel to be balanced and brought face to face with the center hole of the wheel, the resilient collar can be manually pressed through the hole so as to bring said plate into firm contact with the wheel's mounting surface, whereupon the resilient collar, by virtue of being somewhat compressed uniformly within the wheel opening then retains the position of the device securely in the wheel; and on the opposite surface of said plate and integral therewith at its center, a protrusion of symmetrically convex configuration whereby the wheel may be positioned over an appropriate plane surface so as to rock or pivot on the said plate, and the wheel's imbalance shown by means of placing a spirit-level on top of the said spindle.

3,942,384
SWASHPLATE MACHINES
Alfred Parker, Auckland, New Zealand, assignor to Parker Swashplate Limited, Auckland, New Zealand
Filed Sept. 17, 1974, Ser. No. 506,856
Claims priority, application New Zealand, Sept. 17, 1973, 171986
Int. Cl.² F16H 23/00
U.S. Cl. 74—60 8 Claims



1. A swash plate machine comprising a casing including two end members and at least one member providing curved surfaces, a shaft mounted in at least one of said end members, a swash plate non-rotatably mounted in said casing, a bearing between said swash plate and part of said shaft so arranged that rotation of said part of said shaft causes oscillation of said

swash plate within said casing, and at least one substantially parallel sided baffle, and seals between said casing, said baffle and said swash plate, said baffle operating in a slot in said swash plate so that the swash plate is divided into portions, each portion oscillating in a chamber defined by two side walls of said baffle, a part of said curved surface of said casing, a surface of said swash plate, a surface of one of said end members, and said seals, said swash plate when oscillating forming variable-volume chambers, at least one baffle being fixed at the edges in said casing and operating in a slot in said swash plate, the walls defining said slot on each side having a cylindrically-shaped central depression flanked on either side by bevelled faces with trunnions having cylindrical surfaces on one side of each shaped to engage said cylindrically-shaped central depression.

3,942,385

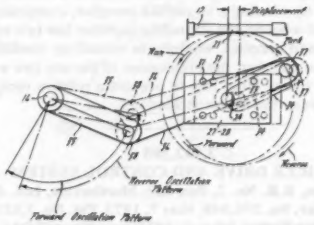
ACTUATING MECHANISM FOR IMPARTING OSCILLATORY MOTION TO AN OUTPUT SHAFT

Paul A. Westerdale, Riverview, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sept. 13, 1974, Ser. No. 505,883

Int. Cl.² F16H *21/40*; A47L *1/00*; B60S *1/02*

U.S. Cl. 74—70 **10 Claims**



1. An actuating mechanism for imparting oscillatory motion to an output shaft journalled for pivotal movement about a fixed pivot axis,

the actuating mechanism including a power shaft adapted to be driven by a reversible motor means,

the power shaft carrying a drive worm,

a worm gear in mesh with the drive worm and coupled to a drive shaft,

articulated crank and link means having components of fixed length,

the crank and link means coupling the drive shaft to the output shaft for translating rotation of the drive shaft into oscillation of the output shaft through an arc of fixed length,

a slide means journalling the the drive shaft,

and guide means supporting the slide means for shiftable movement in a direction parallel to the axis of rotation of the power shaft,

the slide means being self-positioning in a first or second position on said guide means in response to the direction of rotation of the worm gear,

the drive shaft journalled in the slide means being positioned by the latter closer to the fixed pivot axis of the output shaft in the first position of the guide means than in the second position of the latter to bodily displace the angular position of the fixed length arc through which the output shaft is oscillatable.

3,942,386

GEAR BOX WITH INTEGRAL DIFFERENTIAL

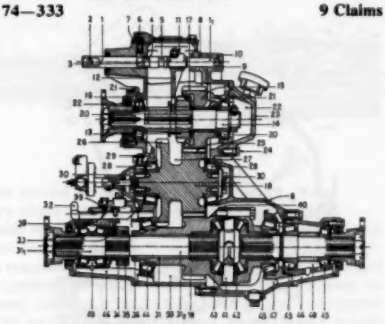
Paul Etienne Rene Legueu, 85, Avenue du Mazy, Pornichet, France

Filed Dec. 11, 1974, Ser. No. 531,690

Claims priority, application France, Dec. 13, 1973, 73.44486

Int. Cl.² F16H *3/08*

U.S. Cl. 74—333 **9 Claims**



1. A gear box with integral differential comprising:

a unitary gear having a first set of gear teeth of predetermined pitch and pitch diameter, and a second set of teeth axially spaced from the first set by an annular groove and of substantially different pitch and/or pitch diameter;

a ring gear whose outer teeth permanently engage said first set of gear teeth;

a differential drive gear whose teeth also permanently engage said first set of gear teeth; and

a gear reciprocable between three axially spaced positions, engaging the inner teeth of said ring gear in one said position, engaging said second set of teeth in said unitary gear in another of said position, and being aligned with said groove in said unitary gear in the third of said positions.

3,942,387

REPLACEABLE FREEWHEEL UNIT FOR HELICOPTERS

Robert A. Stone, Stratford, and Ray D. Leoni, Woodbridge, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 15, 1974, Ser. No. 514,853

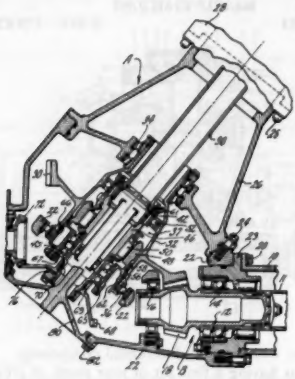
Int. Cl.² F16H *1/20*

U.S. Cl. 74—417 **10 Claims**

1. In a helicopter main rotor drive, an angle gear box, a power input shaft mounted on bearings in said gear box having a bevel pinion, an angularly related output shaft mounted on bearings in said gear box having a bevel gear meshing with said pinion, said output shaft comprising a tubular member having a bell-shaped outer end forming an axial chamber of substantial diameter, said gear box having an unobstructed opening aligned with the chamber in said output shaft at least as large in diameter as the diameter of said chamber, a torque shaft coaxial with the inner end of said output shaft with its outer end in communication with said chamber, and a clutch and freewheel unit axially insertable into said chamber and axially removable therefrom through said opening, said unit and both said output shaft and said torque shaft having cooperating axial splines for establishing a driving connection between said output shaft and said torque shaft upon insertion of said unit into said chamber.

7. In a helicopter main rotor drive, an angle gear box, a power input shaft mounted on bearings in said gear box having a bevel pinion, an output shaft angularly related to said input shaft mounted on bearings in said gear box having a bevel gear meshing with said pinion, said output shaft comprising a tubular member of relatively small diameter at its inner portion having its outer portion enlarged to form a chamber of sub-

stantial diameter, a torque shaft concentric with said output shaft communicating with said chamber through the small-diameter end portion of said output shaft, said gear box having an opening of substantial diameter aligned with the chamber in said output shaft, and a freewheel unit freely removable



from said chamber and freely insertable into said chamber through said opening for completing the driving connection between said output shaft and said torque shaft while the adjustment of said bevel gear and pinion and the bearings for their mounting shafts remain undisturbed.

3,942,388

DEVICE FOR THE CONTINUOUS TAKING OF TEST SPECIMENS FROM PULPS OR SLUDGES

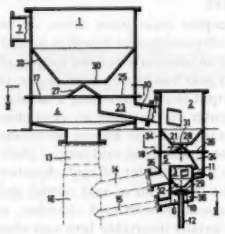
Erich Rathnow, Bochum, and Hans-Joachim Rasch, Herne, both of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Germany

Filed Nov. 12, 1973, Ser. No. 415,131

Claims priority, application Germany, Nov. 15, 1972, 2255964

Int. Cl.² G01N *1/20*

U.S. Cl. 73—421 A **10 Claims**



1. A mechanism for continuously obtaining a representative sample from a fluid material such as from sludges or pulps comprising in combination:

a circular chamber with an inlet opening and a main discharge opening;

a sample divider in the chamber having a plurality of sample openings uniformly distributed circumferentially;

said inlet opening discharging tangentially into the upper end of said chamber and creating a whirling circular motion in the material in the chamber so that the material has rotary turbulence in passing said sample openings; and

a sample takeoff passage connected to at least one of said sample divider openings for a sample flow with the remaining flow through the chamber passing through the unconnected sample divider openings to said main discharge opening.

3,942,389

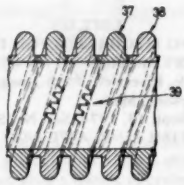
WORM GEAR APPARATUS

Heinz Jung, Uhlandstrasse 6, D-6550 Bad Kreuznach, Germany

Filed Mar. 17, 1975, Ser. No. 559,223

Int. Cl.² F16H *1/16, 55/04*

U.S. Cl. 74—458 **11 Claims**



1. A worm gearing having a worm and a worm gear in meshing engagement and the worm consists of a thread, which is produced by winding a strandlike member, comprising the improvement wherein the strandlike member has two rows of projections and recesses, whereby in wound-up condition of the strandlike member, the projections of the one row engage the recesses of the other row to prevent a relative reciprocal shifting between the adjacent windings.

3,942,390

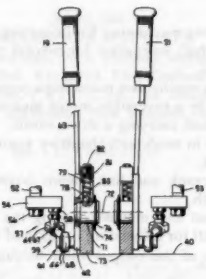
VEHICLE DRIVE AND CONTROL SYSTEM

Guy A. Dunn, R.R. No. 2, Box 433, Martinsville, Ind. 46151

Division of Ser. No. 358,048, May 7, 1973, Pat. No. 3,853,193. This application Mar. 4, 1974, Ser. No. 447,924

Int. Cl. B60k *20/08*; G05g *5/06*

U.S. Cl. 74—529 **1 Claim**



1. A track drive control lever comprising:

an arm having a horizontally extending journal near a lower end thereof, and a handle near the upper end;

a bearing bracket receiving said journal therein for pivoting of said arm about a horizontal axis from an arm home position forward to stop at a full forward position and rearward to stop at a full reverse position; and

detent means in said bracket and journal and constantly urging said arm toward a home position from every possible position of said arm between full forward position and full reverse position,

said detent means including a bolt adjustable, spring loaded detent ball in the bracket; and

detent ball pocket in the journal, said pocket having a wall curved up both ways from the bottom of the pocket toward opposite edges of the pocket at the surface of the journal, said pocket receiving the detent ball therein, the size of the ball and extent of the pocket being established to maintain the ball in contact with at least a portion of the pocket at all pivoted positions of said arm between said full forward position and said full reverse position, whereby as the ball rides up the wall toward one of said edges as said arm is pivoted toward one of said full positions, the spring loaded ball urged downwardly against the wall urges said arm toward home position.

3,942,391

DRIVER PROTECTION IN MOTOR VEHICLES

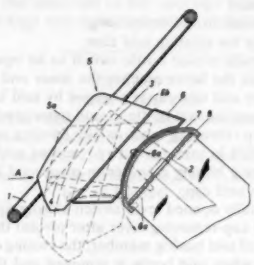
Mathias Otto Barth, and Inge Magel, both of Essener Str. 14, 1 Berlin 21, Germany

Filed Mar. 11, 1974, Ser. No. 449,967

Claims priority, application Germany, Mar. 15, 1973, 2312843

Int. Cl.² B62D *1/04, 1/08*

U.S. Cl. 74—552 **11 Claims**



1. Shock absorbing arrangement for impact protection and driver restraint in a steering wheel for motor vehicles, the wheel having a depressed hub and a rim held by spokes extending radially outwardly and upwardly from the hub to the rim, comprising:

a shock dissipating and absorbing deformible element having a contour to bear againt the spokes and being held by and on the spokes; and

means for mounting the element on the hub for tilting of the element on the hub, at least one of the spokes being sufficiently flexible, so that the element as mounted tilts on and relative to the hub, whereby the upper surface of the element facing the driver tilts relative to the plane of a normal disposition the steering wheel has relative to the hub, such tilting of the element resulting from tilting of the rim, whereby at least one of the spokes against which the element bears and continues to bear is being bent radially outwardly and in a direction running transverse to the plane of the steering wheel rim and toward the hub; said element as mounted tilting independently from the tilting of the rim relative to the hub.

3,942,392

DENTAL HANDPIECE

Joe W. Page, Jr., Santa Ana, and Paul H. Stahlhuth, Mission Viejo, both of Calif., assignors to Joe W. Page, Jr., Huntington Beach, Calif.

Filed June 10, 1974, Ser. No. 477,803

Int. Cl.² F16H *3/44*

U.S. Cl. 74—750 R **9 Claims**

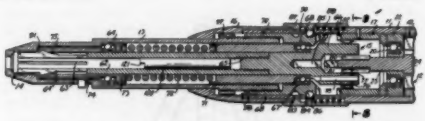
1. A dental handpiece comprising

a first housing barrel,

a second housing barrel manually slideable in said first barrel,

said second barrel being slideable from a first position to a second position,

means for selectively locking said second barrel in either of said positions,



a motor carried by one of said barrels,

a rotary chuck rotatable in the other of said barrels,

a variable speed transmission mechanism intermediate said motor and said chuck,

means responsive to movement of said second barrel to said first position to adjust said transmission mechanism to transmit rotation to said chuck at one ratio and responsive to movement of said second barrel to said second position to adjust said transmission mechanism to transmit rotation to said chuck at a different ratio.

3,942,393

DEVICE FOR THE CONTROL OF SHIFTING MEMBERS OF AUTOMATIC CHANGE-SPEED TRANSMISSIONS

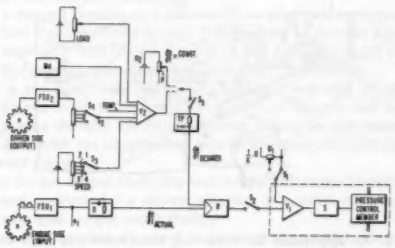
Hans-Joachim M. Förster; Georg Eltze, and Hans Steinbrenner, all of Stuttgart, Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed May 12, 1972, Ser. No. 252,559

Claims priority, application Germany, May 14, 1971, 2124024

Int. Cl.² B60K *41/10*

U.S. Cl. 74—866 **41 Claims**

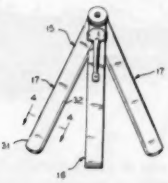


1. An installation for the regulation or control of the actuating force of shifting members which in automatically shifted change-speed transmissions act on friction elements that selectively brake, hold fast, and release a structural element of such a change-speed transmission in dependence on operating parameters of a vehicle, characterized by a control system for controlling said actuating force including control means for varying sid actuating force as a function of at least one operating parameter corresponding to a desired change of engine rotational speed as a function of time (dn/dt), and means for calculating the desired dn/dt in accordance with other vehicle parameters, the control means controlling the oil pressure which serves as an actuating force of the shifting member, said control means varying the oil pressure from an upper level to a lower level and causing the oil pressure to drop from the upper level to below the lower level and then rise to the lower level at the beginning of a shifting operation.

3,942,394
FINISHING SHARPENER AND METHOD FOR USING SAME

John R. Juranitch, 932 S. Layton Blvd., Milwaukee, Wis. 53215

Filed Jan. 20, 1975, Ser. No. 542,295
Int. Cl.[2] B24D 15/00
U.S. Cl. 76—84 14 Claims

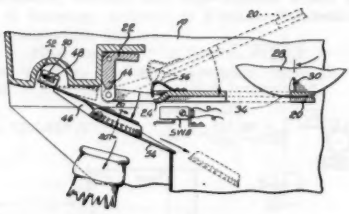


1. A finishing sharpener comprising a handle and a pair of wings, said wings mounted on and extending from one end of the handle such that when the handle is vertically positioned the wings extend from the uppper end thereof and downwardly at an incline, each wing having a flat body defining a rectilinear sharpening edge with a smooth surface against which a knife edge can be engaged for finish sharpening, said sharpening edge being arcuate in cross section and having a radius of relatively small extent.

3,942,395
APPARATUS FOR REMOVING BOTTLE CAPS

Jean-Paul Lepage, 1821, Delorme., Ville de Laval, and Jean-Marie Glorieux, 9033, Viau. St Leonard., Montreal, both of Canada

Filed Aug. 30, 1973, Ser. No. 393,202
Int. Cl.[2] B67B 7/16
U.S. Cl. 81—3.2 5 Claims



1. An apparatus for removing the crown cap of a capped bottle, said apparatus including a housing defining an inner chamber and having a passageway into which said capped bottle is to be inserted, said passageway opening into said chamber, comprising:

A. a cap removing lever extending from said passageway into said chamber and means mounting one end of said lever inside said passageway for pivotal movement about an axis transverse to said lever, said lever having a cap removing hook intermediate its other end and its pivotal axis;

B. a second lever pivotally mounted in said passageway and having in-turned flanges to engage under the rim of said cap when said bottle is inserted in said passageway so as to retain said cap after it is removed from said bottle, said second lever being pivotable downwardly when the uncapped bottle is removed said second lever formed to allow said cap to slide freely under its own weight towards the inside of said housing; said second lever being made of two portions pivoted to one another, one pivoted also to said housing and the other carrying said flanges and pivoting with said lever when said cap is removed;

C. an L-shaped bracket pivotally mounted at the apex thereof to said housing and movable between active and inactive positions where the legs of said bracket alternately abut said housing, said cap-removing lever being pivoted at one end of one of said legs;

D. a biasing member attached at one end to said housing and at the other end to said lever said biasing member being inclined to bias said lever to said inactive position of said bracket which corresponds to a reset position of said cap-removing lever;

E. said L-shaped bracket formed with a downwardly projecting abutment member to engage the top of said bottle cap at a point thereof opposite that where said hook is engaged so as to provide a fulcrum for the cap-removing lever when pivoted for removing the cap;

F. said cap-removing lever having a through aperture between said hook and said other end thereby enabling said L-shaped bracket to allow limited axial displacement of said cap-removing lever;

G. a rotary cam having at least two peripheral pins of which one is engageable, upon rotation of said cam, with said cap-removing lever to pivot it to reset position against the biasing action of said biasing member, said pin resting on the edge of said cap-removing lever aperture in said reset position; and

H. an electrical circuit comprising:

1. a motor for rotating said cam;

2. a normally closed bottle switch to be opened by said bottle as the latter reaches the inner end of said passageway and said cap is engaged by said hook, further movement of said bottle in said passageway displacing said cap-removing lever axially causing said one cam pin to fall in said aperture to release said lever an to allow said biasing member to pivot said lever to thus remove said cap;

3. a normally opened lever switch closing upon being hit by said cap-removing lever after pivotal thereof by the action of said biasing member; the closing of said bottle switch when said bottle is removed and the closing of the lever switch energizing said motor causing rotation of said cam;

4. a cam switch opened by the other of said cam pins when said cap-removing lever is in said reset position, said cam switch closing when said cam starts rotating and being opened again where hit by said one pin thereby opening said circuit and deenergizing said motor.

3,942,396
CARTRIDGE CASE EXTRACTING TOOL

Robert S. Green, Fredericksburg, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

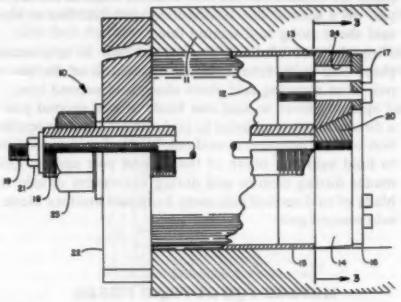
Filed Nov. 12, 1974, Ser. No. 523,097
Int. Cl.[2] B25B 27/00
U.S. Cl. 81—3.05 7 Claims

1. A tool for extraction of ruptured cartridge cases from large caliber guns comprising:

an elongated tubular housing;

a plurality of jaws slidably mounted on one end of said housing for radial movement with respect to said housing, the periphery of each jaw being arcuate in configuration and having a radius of curvature equal to the radius of curvature of the gun barrel; and

means on said housing for camming said jaws outwardly into engagement with the gun barrel whereby said jaws will



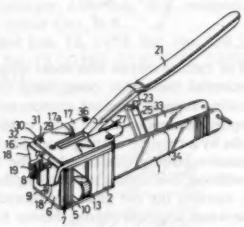
engage the inner rim of the cartridge case and dislodge the cartridge case upon extraction of the tool.

3,942,397

WIRE STRIPPER

Minoru Tanaka, Higashi-Osaka, Japan, assignor to Hanazono Kogu Kabushiki Kaisha, Osaka, Japan

Filed Feb. 7, 1974, Ser. No. 440,477
Claims priority, application Japan, Feb. 7, 1973, 48-16306
Int. Cl.² H02G 1/12
U.S. Cl. 81—9.5 A 5 Claims



1. A stripper for stripping covering from covered wire comprising:

a cutter head including a front plate formed with at least one inserting bore for passing the covered wire;

a pair of cutter members each attached to a holder block and having cutter edges behind the inserting bore and arranged in the cutter head symmetrically on the opposite sides of the covered wire to be inserted therein, the pair of cutter members being pivotally movable and openable from aligned position toward the direction of insertion of the wire; and

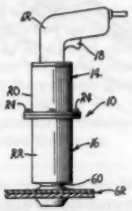
a spring member retained on and interconnecting the holder blocks to render the holder blocks and cutter members pivotally movable along paths symmetrical with respect to the wire and to urge the cutter members in closing direction when they are moved pivotally backward in the closing direction, at least one of said holder blocks projecting from the cutter head.

3,942,398

ZERO TORQUE GEAR HEAD WRENCH

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Allan R. McDougal, La Crescenta, and Robert M. Norman, Glendale, both of Calif.

Filed Oct. 10, 1974, Ser. No. 513,690
Int. Cl.² B25B 17/00
U.S. Cl. 81—56 1 Claim



1. An improved gear head wrench adapted to be employed for torquing bolts seated in a threaded bore formed in a structural member and circumscribed by a spacer comprising:

A. a motor including a first housing and a selectively driven torque input shaft projected axially from said first housing; and

B. a drive unit disposed in juxtaposition with said motor and connected thereto for torquing a selected bolt seated in a threaded bore formed in a structural member and having a concentrically related spacer characterized by a radially extended key and a face disposed in frictional engagement with the member including,

1. a second housing of a substantially cylindrical configuration rigidly affixed to said first housing in coaxial alignment with said torque input shaft and having an open end disposed in spaced relation with said first housing,

2. a sun gear concentrically related to one end of said torque input shaft, being rigidly affixed thereto and supported thereby for driven rotation about an axis coincident with the longitudinal axis of symmetry for said second housing,

3. a torque output shaft disposed within said second housing and supported for driven rotation in coaxial alignment with said torque input shaft,

4. a driving plate disposed in juxtaposed, coaxial relation with said sun gear and rigidly affixed to said torque output shaft,

5. an annular array of planetary gears mounted for rotation on said driving plate in concentric relation with said torque output shaft and in coplanar meshed relation with said sun gear,

6. an internal gear disposed in circumscribing, meshed relation with said annular array of planetary gears and rigidly affixed to said second housing,

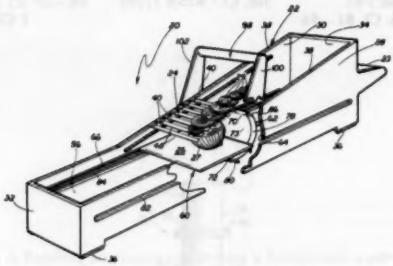
7. coupling means affixed to said torque output shaft in spaced relation with said drive plate adapted to receive in coupled relation the head of said bolt, and

8. a receiver for said spacer including an annulus defined by the open end of said second housing concentrically related to said coupling means, including a keyway for receiving the radially extended key, whereby the housing is adapted to receive said spacer in an interlocked relationship as the coupling is caused to receive the head of said bolt.

3,942,399
ONION SLICING MACHINE

Clayton E. Giangiulio, 5 Skyline Drive, Malvern, Pa. 19335

Filed Feb. 24, 1975, Ser. No. 552,007
Int. Cl.² B26D 4/26, 4/34
U.S. Cl. 83—4 21 Claims

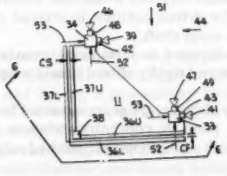


1. Apparatus for slicing hard vegetables comprising carrier means mounted for movement through a cutting path in a first direction, plural cutting blades disposed within said path and having respective cutting edges sequentially offset from one another in a ramp arrangement in said one direction and parallel to one another in the direction normal to said one direction, said carrier means serving to carry said vegetable through said path and into sequential contact with succeeding blades to effect the sequential slicing of said vegetable, said carrier means comprising a movable base for supporting said vegetable and a pusher member for moving said base along said path to carry said vegetable through said blades and for applying a force to said vegetable and directing said force at an area thereon opposite to the blade then in contact with said vegetalbe and maintaining said force thereon irrespective of the position of said vegetable along said path to force said vegetable cleanly through said blade.

3,942,400
SHEAR MOUNTING FOR CORNER SHEARING MACHINE

Gerald V. Roch, Indianapolis, Ind., assignor to Hurco Manufacturing Company Inc., Indianapolis, Ind.

Division of Ser. No. 280,248, Aug. 14, 1972, Pat. No. 3,828,639. This application May 13, 1974, Ser. No. 469,434
Int. Cl.² B26D 1/06, 5/08
U.S. Cl. 83—13 3 Claims

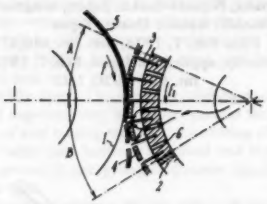


1. A method of shearing metal or other materials in sheet form using power-driven shears and comprising the steps of:
- introducing the sheet to be sheared into the space between the blades of a pair of shears;
- moving one blade of said pair of shears in a first plane for closure thereof with another blade of a pair along a first line to shear said sheet along said line;
- moving said one blade in said plane and away from said another blade after shearing said sheet along said line; and
- applying force to said one blade in a direction perpendicular to said first plane by application of fluid pressure to said one blade to hold said one blade against guide means during said closure during movement of said one blade away from said another blade, said force being applied in a direction tending to increase side clearance between said blades;
- moving one blade of a second pair of shears in a second plane for closure thereof with another blade of the second pair on a second line intersecting said first line to shear said sheet along said second line;
- moving the one blade of the second pair in said second plane and away from said another blade of the second pair after shearing said sheet along said second line;
- and applying force to said one blade of said second pair in a direction perpendicular to said second plane by application of fluid pressure to said one blade of said second pair to hold said one blade of the second pair against guide means during closure and during movement of said one blade of said second pair away from said another blade of said second pair.

3,942,401
METHOD FOR CUTTING FIBERS

Giordano Roncato, Aix-les-Bains, France, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

Division of Ser. No. 343,205, March 21, 1973. This application Sept. 16, 1974, Ser. No. 506,554
Claims priority, application France, Mar. 24, 1972, 72.10335
Int. Cl.² B26D 7/18
U.S. Cl. 83—19 2 Claims



1. A method of cutting thread into short lengths and separating waste material therefrom comprising supporting the thread on a rotating support element, compressing the thread against the support element in a first zone, cutting the thread into short lengths by a rotating cutting drum having a plurality of spaced successive cutting blades, while the thread is in a compressed condition, conveying the cut lengths of thread to a second zone, ejecting the cut pieces of thread radially outwardly from between adjacent cutting blades by ejector elements which urge the cut pieces away from the cutting blades, and providing against accumulation of waste material resulting from the cutting operation between the blades by blowing compressed gas outwardly through the spaces between the cutting blades to remove waste material from the spaces between adjacent cutting blades.

3,942,402
DRAPERY SIZING APPARATUS

John J. Miceli, 5644 W. Diversey, Chicago, Ill. 60639

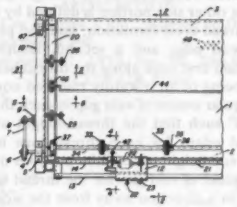
Filed Apr. 22, 1974, Ser. No. 462,860
Int. Cl.² B26D 1/22
U.S. Cl. 83—418 6 Claims

1. A drapery material alignment and cutting apparatus which comprises in combination:
- a. a generally horizontal continuous loop-belt member providing a material receiving surface of extended area to accommodate the placement of drapery material;
- b. drive roller means and belt support means holding said loop-belt member;

c. motor means and drive means connective to said drive roller means to effect a desired periodic movement of said belt member and its material receiving surface;

d. a continuous straight-edge alignment means along one side of said movable loop-belt member and extending parallel with the movement direction of such belt member whereby material of varying lengths can be aligned to move evenly and in a squared relationship with the movable belt member;

e. a material cutter means movably mounted on a dimensioned track means separate from said alignment means



and extending perpendicular to the latter and to the movement of the belt member and adjacent the edge portion of the belt member where the latter moves from the top surface to the bottom to change direction; and

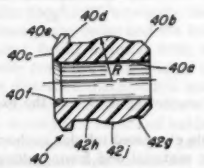
f. material hold-down means extending along and over said belt member for the full width thereof and at a right angle with respect to the straight-edge alignment means, whereby the material being received and moving along with the belt member will in turn be held in a straight perpendicular relationship to the cutter means as it is fed toward the latter for the cutting of a desired length measured from said straight-edge alignment means.

3,942,403

BUSHING FOR PIANO ACTION

Joseph J. Pramberger, Albertson, N.Y., assignor to Steinway & Sons, Long Island City, N.Y.

Filed Feb. 18, 1975, Ser. No. 550,343
Int. Cl.² G10C *3/18;* **F16C** *27/00*
U.S. Cl. 84—251 **3 Claims**



1. A piano action assembly comprising in combination with a bifurcated piano action member having fork arms and a piano having a tongue portion disposed between and in spaced relation to said fork arms to provide opposed surface portions at opposite sides of said tongue portion, a pivotal connection between said tongue portion and said fork arms comprising:

a metal bearing pin traversing and fixedly carried by said tongue portion and projecting from opposite sides of said tongue portion to provide a trunnion end portion at each of said opposite sides,

said trunnion end portions each being journalled in and surrounded by a bushing formed of a resilient, inert elastomeric material seated in a bushing hole in the respective fork arms, which bushing holes are normally aligned but subject to slight misalignment, said bushings each having an internal bore of substantially uniform diameter throughout its length within which the corresponding trunnion end portion of the bearing pin is received with an interference fit and an outer diameter at the end portions of that portion of its length that is seated in the bushing hole less than its outer diameter over a portion thereof mediate said end portions, the mediate portion of said bushing being in press fit with its respective bushing hole,

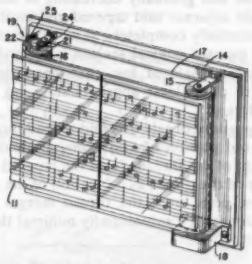
said bushings each having an integral annular spacing flange at one end thereof, said flanges being disposed in substantially close-fitting surface engagement with the inner surface of its respective fork arm and disposed at opposite sides of said tongue portion between said tongue portion and said fork arms, the surface of the flange which engages the inner surface of the fork arm being inclined outwardly from the surface of the fork arm sufficiently to provide clearance between the flange and the fork arm to allow the bushing to be rotated along its axis about the larger outer diameter portion thereof to effect alignment of the internal bore thereof with the bearing pin whereby the bushings are self-aligning with the bearing pin and with each other regardless of misalignment of the bushing holes in the respective fork arms.

3,942,404

OPTICAL METRONOME WITH TRANSPARENT SHEET MUSIC

Juan M. del Castillo, Risco No. 119, Mexico City, Mexico

Filed Nov. 15, 1974, Ser. No. 524,332
Int. Cl.² G10G *1/00;* **G04F** *5/02*
U.S. Cl. 84—484 **5 Claims**



1. An optical type of metronome comprising

a transparent music sheet with musical composition thereon,

a pair of rollers mounted in spaced relation to each other,

a continuous web passing around and between said rollers and positiond behind said transparent sheet,

at least two vertical lines drawn on said web transversely of said web,

means to drive said rollers to move said vertical lines past and behind said transparent sheet in timed relation to the musical composition on said transparent sheet,

supporting means for said transparent sheet including transparent rigid support sheets positioned in front of and behind said transparent music sheet.

3,942,405

PIERCING SHARP POINTED GYPSUM BOARD SCREW FOR METAL STUDS

John Bradley Wagner, 1176 Boulevard Way, Walnut Creek, Calif. 94595

Filed Sept. 23, 1974, Ser. No. 508,178
Int. Cl.² F16B *25/00*
U.S. Cl. 85—46 **6 Claims**

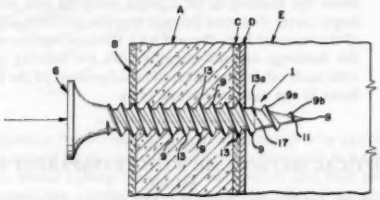
1. A piercing sharp pointed, self drilling and tapping gypsum board screw conprising:

a. a shank having a body portion having a uniform minor diameter with a head at the head end and a tapered conical section terminating in a sharp point at the point end;

b. a first thread formed in said body portion and said tapered section and having a uniform pitch extending from said head end through said body portion and terminating adjacent said pointed end;

c. said first thread having a uniform major diameter in said body portion and gradually decreasing in diameter and thread height in said tapered portion until said thread fades substantially completely;

d. a second thread located intermediate said first threads spaced from said first thread and having a uniform pitch substantially equal to the pitch of said first thread extending from said head end, through said body portion and terminating in said tapered section immediately adjacent the junction of said body portion and said tapered section short of the termination point of said first thread;



e. said second thread having a uniform major diameter substantially equal to the major diameter of said first thread and gradually decreasing in diameter and thread height adjacent said tapered end until said thread fades substantially completely at its termination point;

f. said tapered conical section is formed so as to have an included angle of less than approximately 30° and a length of at least approximately 1.5 times the thread pitch; and

g. the portions of said first and second threads located in the tapered portion of said screw gradually diminish in the height of the threads from the tapered surface to the top edge of the thread as a function of the distance from said screw point until the thread merges with the tapered portion with a substantially minimal thread height.

3,942,406

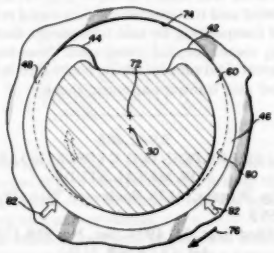
SLAB-SIDED SELF-TAPPING SCREW

Ronald J. Egner, Birmingham, Mich., assignor to Textron Inc., Providence, R.I.

Filed Oct. 7, 1974, Ser. No. 512,541

Int. Cl.² F16B *33/02*

U.S. Cl. 85—47 **1 Claim**



1. A self-tapping fastener capable of forming a female thread in a pilot aperture, said fastener comprising: an elongate shank having driving means thereon, such that the end of said shank remote from said driving means constitutes the work entering end of said fastener; and a threaded portion formed on said shank extending from said work entering end toward said driving means, said threaded portion including a tapered thread-forming section proximate said work entering end, and a cylindrical portion having a circular thread formation disposed intermediate said thread-forming section and said driving means, said thread-forming section including a plurality of discontinuous rolled thread turns, characterized in that the crest formation of each thread turn includes a pair of generally diametrically disposed lobe portions, with diametrically spaced asymmetrical side portions disposed intermediate said lobes on each thread helix, said side portions having a thread height less than that of said lobe portions, and one of said side portions being defined by a single gap in the thread turn, while the other side portion is defined by an under-filled, incomplete thread crest formation, said gap producing a first, following thread edge and a second, leading thread edge spaced from said first edge along the thread helix, said leading thread edge being of an inwardly rounded configuration, the maximum angular extent of said gap in each thread turn being less than 180° such that the thread height at said first and second thread edges for each thread turn is less than the maximum thread height of the lobe portions of said turn, and the angular extent of said gap for the thread turns decreasing progressively in a direction away from the work entering end of said fastener.

3,942,407

EXPANDABLE SCREW ANCHORING DEVICES

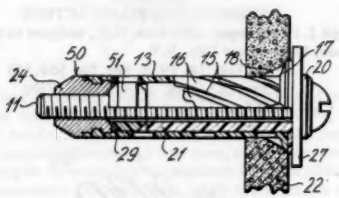
Louis Aackersberg Mortensen, Expandet Screw Anchors A/S, Kongevejen 35, 3460 Birkerod, Denmark

Continuation of Ser. No. 237,044, March 22, 1972, abandoned, which is a continuation-in-part of Ser. No. 39,886, May 22, 1970, abandoned. This application Aug. 6, 1974, Ser. No. 495,290

Claims priority, application Denmark, May 30, 1969, 2954/69

Int. Cl.² F16B *13/04*

U.S. Cl. 85—71 **17 Claims**



1. A screw anchoring device of the expandable type comprising:

a deformable elongated tubular anchoring member molded of plastic material and having elongated wall parts defined by slits or slots therein extending longitudinally up to a first end of the anchoring member,

a circumferentially continuous flange at said first end of the anchoring member,

an internal abutment defined within a second end portion of the tubular anchoring member,

a portion having a bore hole at said second end of the tubular anchoring member,

elongated tubular means inserted in said anchoring member and extending between said first end and said internal abutment, said tubular means comprising first and second tubular members of like diameter slidably snugly received in said tubular anchoring member and axially disposed in end-to-end relationship therein, one of said tubular members being less compressible in an axial direction than the other, said less compressible tubular member being adjacent said first end of the anchoring member at least one of said tubular members of said tubular means being

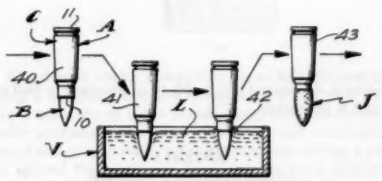
substantially less compressible in an axial direction than said slitted anchoring member,

a threaded screw extending into said anchoring member from said first end thereof, through said tubular means and into said bore hole to threadedly engage the latter to draw said second end of said anchoring member toward said first end and thereby axially compress said tubular means and cause said elongated wall parts to bow outwardly under control of said tubular means.

3,942,408
METHOD OF TREATING AND PRODUCING IMPROVED AMMUNITION

John Bernath, Los Angeles, Calif., assignor to Du-Kote Corporation, San Jacinto, Calif.

Filed Sept. 21, 1972, Ser. No. 290,960
Int. Cl.² F42B 31/02
U.S. Cl. 86—19 **11 Claims**



1. The method of making an ammunition round comprising an elongate tubular metal casing with an open front end and a closed rear end, an elongate metallic bullet with a rear end engaged and held in the front end of the casing and a forward portion projecting forwardly from the casing and a lubricous protective jacket structure about the forward portion of the bullet and continuing rearwardly about the forward portion of the casing to seal about and between the bullet and casing, said jacket comprising an inner layer of soft, viscous plastic lubricous material and a thin outer skin of hard, dry, frangible material, said method comprising; first, assembling the casing, and bullet; second, heating a volume of a mixture of normally non-fluid, plastic, viscous, hydrogentated vegetable oil and a normally hard, dry, brittle carnuba wax to a liquid state; third, arranging the assembly with its longitudinal axis vertically disposed and the bullet disposed downwardly; fourth, lowering the assembly to submerge the bullet and the front end of the casing into the heated liquid mixture; fifth, elevating and extracting the assembly from the heated liquid mixture with a layer of said mixture deposited thereon; and sixth, permitting the heated assembly to cool whereby the wax at and adjacent to the surface of the deposit first cools and hardens and establishes the hard, dry, frangible skin of the jacket about the remainder of the deposit and said remainder of the deposit next solidifies to establish the inner layer of the jacket.

3,942,409
SINGLE RAIL MISSILE LAUNCHER WITH SHIFT REGISTER TIMING

Lawrence W. Baldwin, Canoga Park, and Avinoam S. Zerkowitz, Woodland Hills, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 8, 1974, Ser. No. 440,886
Int. Cl.² F41F 3/06
U.S. Cl. 89—1.814 **1 Claim**

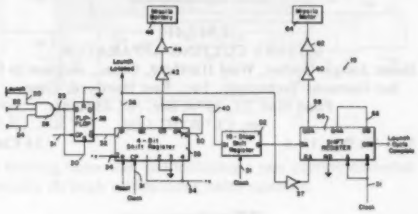
1. A digital launch sequence timer in a single rail launcher for controlling the timing of the sequence of events necessary to launch the missile having a battery and a motor, and means under the control of the aircraft pilot for producing a launch signal for starting the timing sequence, wherein the improvement comprises:

a NAND gate for receiving said launch signal, said NAND gate having an output;

a first shift register being connected to said output of said NAND gate, said register having two outputs;

said first output of first register for delivering a pulse of predetermined duration to activate the missile battery;

a second shift register having a motor firing signal output, said second shift register having its input connected to



said second output of said first register, said second shift register delaying the initiation of said firing signal by a predetermined period;

said second register having an output carrying the delayed firing initiation signal; and

a third shift register connected to said output of said second register for timing the duration of said launch pulse signal to said motor.

3,942,410
FIRING MECHANISM FOR FIREARM APPARATUS

Maxwell G. Atchisson, 55 Old Yellow Springs Road, Apt. H, Fairborn, Ohio 45324

Division of Ser. No. 250,006, May 3, 1972, Pat. No. 3,850,076.
This application Oct. 29, 1974, Ser. No. 518,222
Int. Cl.² F41C 19/00
U.S. Cl. 89—139 **11 Claims**

1. Firing mechanism for a firearm having a pair of spaced apart receiver side plates, comprising:

a substantially flat sear bar having an elongate member, and first and second flat fingers extending outwardly from spaced apart locations on said elongate member;

each of said fingers extending through and being received in a respective first slot in one of said side plates and a respective second slot in the other said side plate, so that each of said fingers extends between the side plates, with each of said slots being elongated to a greater extent than the corresponding dimension of the finger received therein to allow the fingers to undergo an extent of sliding movement within said slots;

said first one of said sear bar fingers having a sear surface;

a hammer mounted for firing movement along a predetermined path from a cocked position to contact a firing member, said hammer having a sear contact means which

selectively engages said sear surface to block said firing movement; and

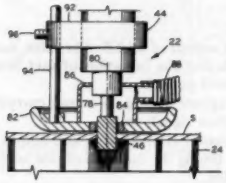
trigger means mounted in operative relation to said second sear bar finger to urge said second sear bar finger and thus said sear bar for movement in a direction which withdraws said sear surface from engagement with said sear contact means, so that said hammer is freed for firing movement along said predetermined path to contact the firing member.

3,942,411

ROTARY CUTTING APPARATUS

Heinz Joseph Gerber, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., East Hartford, Conn.

Filed Mar. 25, 1974, Ser. No. 451,346
Int. Cl.² B23C 1/06
U.S. Cl. 90—11 A 14 Claims



1. Apparatus for cutting a workpiece such as sheet material comprising:

support means defining a support surface on which the workpiece may be placed during a cutting operation;

a cutting tool positioned over the support surface for cutting the workpiece, the tool including a cutting wheel having cutting edges arranged coaxially of an axis of rotation located in perpendicular relationship to the support surface and a stripping member arranged coaxially of the wheel and in cooperating close-fitting relationship with the cutting edges to shear chips being cut from the workpiece; and

controlled drive means connected with the support means and the tool for translating the tool and the workpiece relative to one another parallel to the work surface to advance the tool through the workpiece along a desired line of cut.

3,942,412

FLUID CONTROL SYSTEM FOR DUAL POWER STEERING

Richard H. Sheppard, c/o R. H. Sheppard Co., Inc., Hanover, Pa. 17331

Filed Nov. 1, 1974, Ser. No. 520,160
Int. Cl.² F15B 7/00
U.S. Cl. 91—411 R 6 Claims

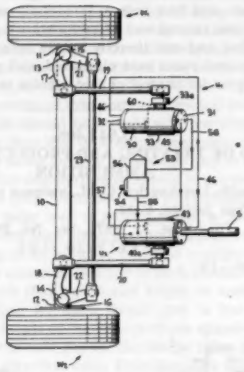
1. A fluid control circuit for a power steering system having at least two power units with reciprocating pistons each in a cylinder with opposed working chambers comprising:

pump means for supplying a flow of pressurized fluid to said units,

discharge means connected to at least one of the units to receive the flow of fluid including the fluid from the chamber on the exhaust side of the piston,

a transfer space in the other unit separate from the chambers connected to said discharge means of said one unit to receive the flow of low pressure exhaust fluid, and

fluid return means to receive said flow of fluid connecting said transfer space with the intake side of said pump means, whereby the temperature gradient between said



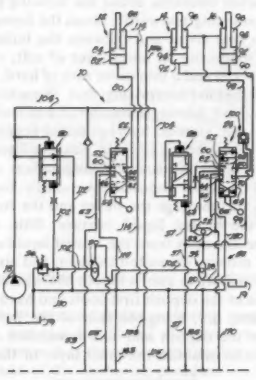
units is minimized and build-up of pressure in said other unit is prevented.

3,942,413

LOAD LIMITING SYSTEM

Robert E. Schwary, and Joseph A. Shurger, both of Wooster, Ohio, assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 1, 1974, Ser. No. 493,589
Int. Cl.² F15B 11/16
U.S. Cl. 91—412 13 Claims

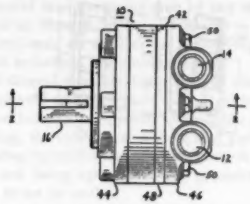


1. In a hydraulic control system including a source of fluid supply; a fluid motor; a control valve connected to said motor; said control valve having an inlet port and a movable valving member which communicates pressure flow to said motor; a fluid responsive valve means connected to said source of fluid supply and said inlet port; a control circuit connected to said control valve and said fluid responsive valve means; said fluid responsive valve means being responsive to said control circuit to control the fluid supplied to said control valve; limit valve means connected to said motor and said control circuit; said limit valve means being responsive to predetermined pressure conditions at said motor to reduce the pressure in said control circuit to thereby reduce the fluid supply and prevent further actuation of said motor.

3,942,414
HYDRAULIC DEVICE

Robert T. Eddy, South Bend, Ind., assignor to Reliance Electric Company, Mishawaka, Ind.

Continuation of Ser. No. 876,543, Nov. 13, 1969, abandoned.
This application May 31, 1973, Ser. No. 365,578
Int. Cl. F01b *13/06*
U.S. Cl. 91—487 12 Claims



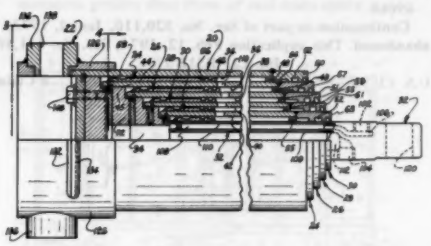
1. A hydraulic motor comprising an annular shaped stator defining a compartment and having an internal cam surface having a plurality of lobes forming alternate outwardly and inwardly extending reaction surfaces, a rotor concentrically mounted within said stator compartment and having a plurality of spaced fluid pressure chambers disposed around the periphery and extending from side-to-side of the rotor to provide the chambers with opposite open ends in the sides of the rotor, each chamber having a slot in the inner end extending to at least one end of said rotor and having two straight opposed wall portions extending parallel with the axis of the rotor and being parallel to one another, a rolling piston element of cylindrical shape on an axis parallel with the axis of the rotor between said wall portions in each of said chambers engaging by direct contact said outwardly extending surface for rotating said rotor and engaging said inwardly extending reaction surface for ejecting fluid from said chamber, only one piston element contacting a particular lobe at any given time, and the number of pistons being similar in number to but different from said lobes to substantially balance the radical forces on said rotor, a member disposed at one side of and in operative contact with said rotor and having alternate high and low pressure ports connected to said compartment and directly with an open end of said chamber slots at the side of the rotor and corresponding in number to the number of said lobes, the width of said slots of said chambers being substantially the same size as said ports in the circumferential direction of said rotor, a fluid inlet port connected to said high pressure ports, a fluid outlet port connected to said low pressure ports, and a power output shaft connected to said rotor.

3,942,415
POWER CYLINDER CONSTRUCTION

Roland Haller, Shiloh, Ohio, assignor to Harsco Corporation, Camp Hill, Pa.

Filed Mar. 27, 1974, Ser. No. 455,063
Int. Cl.² F01B *15/04*; F16J *11/00*
U.S. Cl. 92—118 2 Claims

1. A power cylinder comprising, in combination, an outer tubular housing means including a housing inner wall, a housing base end provided with a housing base opening, and a housing outer end provided with a housing outer opening; base means mounted on said housing base end and including an annular base member including an annular bore for receiving said housing base end, said base means further including a central base plate access opening axially aligned with said housing base opening, transverse bearing holes for pivotally receiving a base pivot pin, and a peripherally extending welding access slot overlapping said housing base end; a weld connecting said base means to said housing means at said housing base end; and piston means slideably mounted within

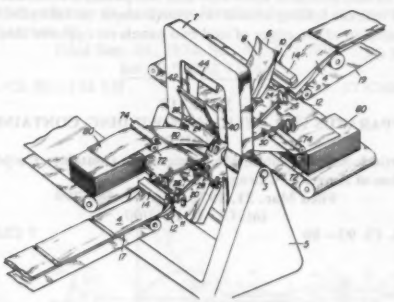


said housing inner wall and including a ram portion extended outwardly through said housing outer opening.

3,942,416
SQUARE BOTTOMED BAG FOLDING APPARATUS

Kenneth E. Ackley, Pittsford, N.Y.; William H. Eburn, Jr., Appleton, Wis., and Paul A. Lucas, Webster, N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 8, 1974, Ser. No. 449,585
Int. Cl.² B31B *1/32*
U.S. Cl. 93—32 2 Claims



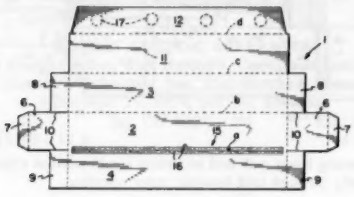
1. An apparatus for refolding a tapered, transversely sealed, gussetted plastic film bag into a gussetted square bottom plastic film bag, said tapered bag having front and back wall portions generally parallel to said seal, gussetted side wall portions generally transverse to said seal and an open end disposed at the end of said bag opposite said seal, said apparatus comprising:

a. a shaft;
b. an expandable rectangularly shaped member mounted for rotation about said shaft;
c. means for opening plastic film bags for delivery to said expandable member;
d. feeding means for supplying said bags onto said expandable rectangularly shaped member;
e. means for expanding the rectangularly shaped member after said bag is placed thereon, thereby forming a rectangularly shaped bag;
f. means for gussetting said side wall portions toward each other in a plane generally parallel to said seal; and
g. an end tucking means utilized to form a gusset across said rectangularly shaped bag bottom and generally parallel to said seal and toward said open end.

3,942,417
DISPENSER CARTON AND METHOD OF MANUFACTURE

William W. Finn, 303 N. Kalamazoo Ave., Marshall, Mich. 49068

Continuation-in-part of Ser. No. 320,110, Jan. 2, 1973, abandoned. This application Feb. 12, 1974, Ser. No. 441,880
Int. Cl.² B31B *1/26*
U.S. Cl. 93—49 M 4 Claims

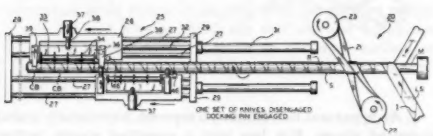


1. A method of forming a dispensing carton adapted for the dispensing of a selected length of material from a roll thereof, said method comprising forming a blank of material; scoring said blank to form a plurality of panels; slitting said blank between two adjacent panels to a depth less than the thickness of said material; applying a strip of abrasive material to each of said two panels and overlying the slit therebetween; folding said two panels about said slit to a position in which they are substantially normal to one another; and folding the remainder of said panels to form with said two panels a container for said roll, the folding of said two panels about said slit effecting separation of the edges of said two panels on opposite sides of said slit.

3,942,418
APPARATUS FOR HELICALLY WINDING CONTAINER BODIES

Curtis J. Smith, Fenton, Mo., assignor to Container Corporation of America, Chicago, Ill.

Filed Mar. 21, 1975, Ser. No. 560,799
Int. Cl.² B31C *3/00*
U.S. Cl. 93—80 7 Claims



1. A machine, for the production of helically wound tubular bodies from strip material, comprising:

a. means for winding strip material on a mandrel to form a tube having recurring registration indicia thereon and for moving the tube axially along the mandrel;

b. a pair of carriages each having a knife array thereon and being independently movable into position to cut said tube into individual bodies along the registration indicia between each body;

c. means for moving each of said carriages axially with respect to said axially movable tube and into synchronism therewith;

d. means for moving said knife array against said tube when the carriage having said knife array is synchronized in speed with said axially moving tube;

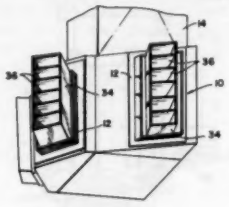
e. means for sensing said indicia;

f. means operable in response to said sensing means for varying the speed of advance of said axially movable tube whereby said knife array cuts said tube on the registration indicia without the formation of waste in said tube.

3,942,419
BARREL TYPE AIR DIFFUSER

Donald Bramston Beach, 10250 Reese Road, Clarkston, Mich. 48016

Filed Feb. 21, 1974, Ser. No. 444,402
Int. Cl.² F24F *13/14*
U.S. Cl. 98—40 A 9 Claims



1. A barrel-type air diffuser for providing both horizontal and vertical controls of air streams including, in combination:

a frame member providing a central rectangularly-shaped opening;

a barrel-shaped member fitting the opening of the frame member with slight clearance with the side and end sections thereof, said barrel member being opened along one side to serve as an air inlet and being opened on the opposite side to serve as an air outlet;

pivot mounts carried by the frame member and connected to the barrel member for providing limited rotation thereof about an axis generally corresponding to that of the barrel member and disposed parallel to the plane of the frame member;

an outlet duct mounted on the barrel member in surrounding relation to the air outlet opening thereof and having the side and end walls thereof projecting outwardly beyond the opening to serve as a nozzle for controlling the direction of the air stream discharged through the outlet opening of the barrel member;

a plurality of similarly formed vanes mounted crosswise in the outlet duct of the barrel member in spaced apart relation to one another for further controlling the direction of the air stream discharged from the outlet duct; and

said air inlet of the barrel member as well as the interior of the barrel member being free of any obstruction to the flow of air through the barrel member to the outlet duct.

6. A barrel-type air diffuser for controlling the direction of air streams including, in combination:

a frame member providing a central rectangularly-shaped opening;

a barrel-shaped member substantially fitting the opening of the frame member and having side portions thereof located on opposite sides of the plane of the frame member, the cylindrical wall of said barrel-shaped member being opened along one side portion to serve as an air inlet and being opened on the opposite side portion to serve as an air outlet;

pivot mounts carried by the frame member and connected to the barrel member for providing limited rotation thereof about an axis generally corresponding to that of the barrel member and disposed parallel to the plane of the frame member;

an outlet duct mounted on the barrel member in surrounding relation to the air outlet opening thereof and having its side and end wall sections thereof projecting forwardly beyond the opening to serve as a nozzle for controlling the direction of the air stream discharged through the outlet opening of the barrel member;

a plurality of vanes mounted crosswise in the outlet duct of the barrel member in spaced apart relation to one another and further acting to control the direction of the air stream discharged from the outlet duct, each of said

vanes being secured to a pivot rod which has an end portion thereof extending through a side wall of the outlet duct and projecting externally of the duct and forwardly of the curvature of that surface of revolution conforming to the cylindrical wall of the barrel-shaped member;

means operatively associated with the externally projecting end portion of each such pivot rod for releasably locking its associated rod and vane in pivotally adjusted position in the outlet duct; and

said air inlet of the barrel member as well as the interior of the barrel member being free of any obstruction to the flow of air through the barrel member to the outlet duct.

9. A barrel-type air diffuser for controlling the direction of air streams including, in combination:

a barrel-shaped member dimensionally shaped to fit within the opening of an air duct such as to have side portions thereof located on opposite sides of the plane of the duct opening, the cylindrical wall of said barrel-shaped member being opened along one side portion to serve as an air inlet and being opened on the opposite side portion to serve as an air outlet;

pivot mounts carried by the barrel-shaped member for mounting the same in an opening in an air duct for rotation about an axis generally corresponding to that of the barrel member and disposed parallel to the plane of the duct opening in which the barrel member is installed;

an outlet duct mounted on the barrel member in surrounding relation to the air outlet opening thereof and having its side and end wall sections thereof projecting forwardly beyond the opening to serve as a nozzle for controlling the direction of the air stream discharged through the outlet opening of the barrel member; a plurality of vanes mounted crosswise in the outlet duct of the barrel member in spaced apart relation to one another and further acting to control the direction of the air stream discharged from the outlet duct, each of said vanes being secured to a pivot rod which has an end portion thereof extending through a side wall of the outlet duct and projecting externally of the duct, and beyond the curvature of that surface of revolution conforming to the cylindrical wall of the barrel-shaped member;

means operatively associated with the externally projecting end portion of each such pivot rod for releasably locking its associated rod and vane in pivotally adjusted position in the outlet duct; and

said air inlet of the barrel member as well as the interior of the barrel member being free of any obstruction to the flow of air through the barrel member to the outlet duct.

3,942,420
SPRAY BOOTH FOR ELECTROSTATIC POWDER COATING

Frank P. Marino, Cos Cob, Conn., assignor to Interrad Corporation, Stamford, Conn.

Filed May 6, 1974, Ser. No. 467,375
Int. Cl.² F23J 11/00
U.S. Cl. 98—115 SB **10 Claims**

1. A spray booth structure for a coating system, which comprises

a. a skeleton structure defining a spray booth housing frame and including at least one pair of horizontally spaced, vertically extending structural rib elements,

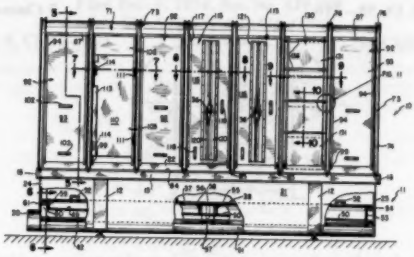
b. a roof panel extending between said rib elements and forming an upper part of said spray booth housing,

c. said roof panel having a skirt portion extending downward for a distance along said rib elements but unattached thereto,

d. a panel-receiving lip element in the lower portion of said spray booth housing extending horizontally between said rib elements and upwardly for a distance along said rib elements,

e. said lip element forming an open space between the top of the lip and the bottom of the skirt, and

f. a removable side wall panel assembly formed in part of sheet-like construction and having width and height dimensions greater than those of said open space,

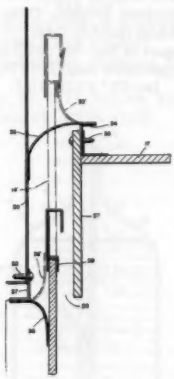


g. said wall panel assembly enclosing a portion of the spray booth and having an upper margin received between said skirt and said rib elements, side margins received inside of said rib elements, and a bottom margin received inside of said lip.

3,942,421
SEAL STRIPS FOR FUME HOODS

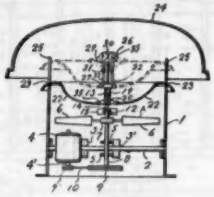
Richard C. Tringali, and Michael Turko, both of Manitowoc, Wis., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Nov. 18, 1974, Ser. No. 524,780
Int. Cl.² F23J 11/00
U.S. Cl. 98—115 LH **17 Claims**



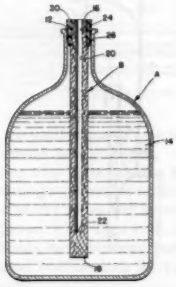
1. In a fume hood having a frame, the frame including a pair of spaced-apart walls providing a sash clearance opening, and a sash having front and rear surfaces and being slidably mounted in the frame for movement within the sash clearance opening between raised and lowered positions, the improvement comprising seal means mounted on one of the pair of spaced-apart walls and extending into the sash clearance opening, the seal means extending toward the sash when the sash is raised whereby the clearance opening between the sash and said one wall is substantially sealed.

3,942,422
ROOF VENTILATOR
Yuzo Kawai; Hajime Kawai, and Ryoyu Hachisu, all of Nara, Japan, assignors to Suiden Kabushiki Kaisha, Osaka, Japan
Filed June 11, 1974, Ser. No. 478,375
Claims priority, application Japan, June 19, 1973, 48-72529
Int. Cl.² F04D 25/08, 25/14
U.S. Cl. 98—116 7 Claims



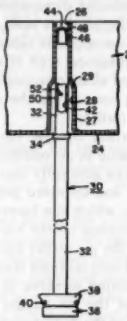
1. A roof ventilator adapted to be housed in a pipe provided with an opening therein which comprises, a substantially unitary shutter means adapted to extend across the opening in a pipe and to be raised above or lowered over such an opening, a supporting rod connected to a rotating shaft for rotatable disposition within such a pipe, a fan means to be housed in such a pipe below said shutter means and attached to said shaft, means for rotating said shaft and the fan associated therewith, said shutter means being supported on said supporting rod by two pairs of foldable arms, said foldable arms being disposed above said shutter means, each pair of arms being pivotally connected to each other and to a terminating top end portion of said supporting rod at one end and associated with the shutter means at the other end so that upon the rotation of the fan means a unitary upward movement of said pairs of foldable arms is achieved which lifts the shutter means above the end of a pipe.

3,942,423
DEVICE FOR AGING WINE OR THE LIKE
Fred Herzfeld, Cleveland Heights, Ohio, assignor to Lisa Rosenblatt, Cleveland Heights, Ohio
Continuation-in-part of Ser. No. 368,252, June 8, 1973, abandoned. This application Aug. 2, 1974, Ser. No. 494,193
Int. Cl.² C12H 1/22
U.S. Cl. 99—277.1 12 Claims



1. A device for aging wine or the like comprising; an elongated wooden rod made from heartwood of white oak of a type which produces tyloses in the heartwood and with the grain running parallel to the longitudinal axis of said rod, said rod having opposite ends, at least one longitudinally extending bore in said rod extending from one of said ends toward the other of said ends to leave a thickened end which prevents bleeding of the wine into said bore, and sealant means for sealing the exterior surface of said rod adjacent said one end, the wall of said bore between said opposite ends of said rod allowing slow penetration of gases only and preventing seeping of wine into said bore.

3,942,424
PUMP FOR COFFEE BREWING DEVICE
George M. Charbonneau, Big Flats, and Leslie C. Cummings, Dundee, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Oct. 15, 1974, Ser. No. 514,722
Int. Cl.² A47J 31/00
U.S. Cl. 99—313 5 Claims

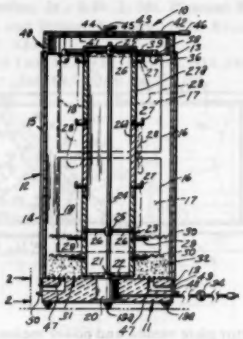


1. An improved coffee maker pump assembly for controlling the volume of water delivered to coffee grounds for extracting a brew therefrom which comprises, a stem portion, a base portion connected to said stem portion adjacent one end thereof, a passageway extending longitudinally within said stem portion, inlet means adjacent said base portion for supplying water to said passageway, restricted outlet means formed in said stem portion and communicating with said passageway for controlling the volume of flow from said passageway delivered to coffee grounds retained exteriorly of said passageway during a brewing period and for simultaneously providing a back pressure within said passageway while delivering such flow from said outlet means, and relief means formed in said stem intermediate said restricted outlet means and said base portion for relieving back pressure within said passageway and for discharging fluid therefrom for flow countercurrent to flow within said passageway.

3,942,425
COMBINATION MEAT SMOKING DEVICE AND MERCHANDISE DISPLAY CASE
Bruce W. Canright, 204 Gardenview Drive, San Antonio, Tex. 78213
Filed Sept. 18, 1974, Ser. No. 506,991
Int. Cl.² A23B 4/04
U.S. Cl. 99—467 9 Claims

1. A combination smoking and merchandise display device adapted to treat food products by smoke producing means comprising
a base,
an outer transparent casing including upper and lower ends,
the lower end of said outer casing secured to said base,
a cover secured to the upper end of said outer casing,
an inner casing mounted in said outer casing,
means in said base to rotate said inner casing,
food product support means on said inner casing,
said smoke producing means adapted to be supported on said base intermediate said inner and outer casings,
means in said base to control the amount of air to said

smoke producing means,



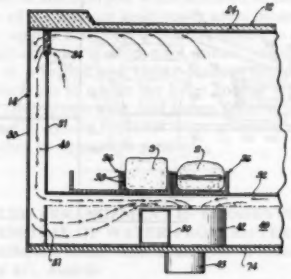
means in said cover to control the amount of smoke emitted from said device upon ignition of said smoke producing means.

3,942,426

HEATED SANITARY SANDWICH BIN WITH AIR CURTAINS

Chester J. Binks, LaGrange, and Steve Kroll, Schaumburg, both of Ill., assignors to Restaurant Technology, Inc., Oak Brook, Ill.

Filed Apr. 14, 1975, Ser. No. 567,705
Int. Cl.² A23B *4/04*; B65G *55/00*
U.S. Cl. 99—473 **12 Claims**



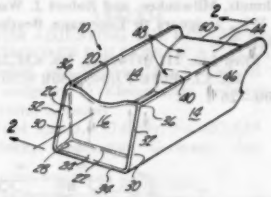
1. A sanitary sandwich bin for maintaining elevated temperatures therewithin without excessive desiccation of sandwiches kept therein and providing front and rear alway-open service openings, comprising a housing, said housing including a front wall, a rear wall, a thermally insulated top, a pair of side walls and a floor, said front and rear walls each defining an always-open service opening substantially across the width of the bin through which sandwiches may be inserted and from which they may be withdrawn in first-in-first-out order, and guide means for guiding rows of sandwiches from the rear service opening to the front service opening, front blowers and rear blowers having an intake side and a discharge side, a rear air discharge nozzle across the width of the rear service opening for discharging an air curtain across the rear service opening, a front air discharge nozzle across the width of the front service opening for discharging an air curtain across the front service opening, separate duct means communicating the discharge of each of said front and rear blowers with its respective front and rear nozzles, electric heaters in said front and rear ducts for heating the air to be discharged through said nozzles, and air-return chambers defined by said housing for receiving air from the air curtains and communicating with the intake side of said blowers.

3,942,427

EGG AID

Humberto Vaca, 11874 College, Detroit, Mich. 48205

Filed Dec. 5, 1974, Ser. No. 529,809
Int. Cl.² A23N *5/06*; A47J *43/00*
U.S. Cl. 99—571 **11 Claims**



11. A kitchen utensil for cracking eggs and transferring them to a cooking vessel, or the like, comprising,

a receptacle defined by a bottom, laterally spaced side walls and longitudinally spaced end walls extending upwardly from junctures with said bottom wall,

one of said end walls having an upper edge portion which forms a surface against which eggs may be struck for cracking,

the other end wall and said side walls having portions which cooperate to define a chute having an open end for slidable delivery of eggs from said receptacle responsive to tilting said receptacle,

said other end wall having laterally extending rib means on its exterior dimensioned and contoured to pivotally engage an upper surface portion of a vessel to facilitate egg-delivery tilting of said receptacle relative to such vessel.

3,942,428

APPARATUS FOR REMOVING ROOTS FROM BULBS OR THE LIKE CORMS

Claus Clausen, Stubberupholm, Kanalvej 53, DK-4540 Faarevejle, Denmark

Filed Nov. 29, 1973, Ser. No. 420,097
Int. Cl.² A23N *15/08*
U.S. Cl. 99—640 **4 Claims**

1. An apparatus for removing roots from bulbs or the like corms, the apparatus comprising:

a plurality of pairs of rollers for engaging the roots of the bulbs;

an upper frame supporting said pairs of rollers;

means for rotating rollers of each said pair in opposite directions for pulling off the roots of the bulbs;

bulb supporting means positioned below said pairs of rollers, said supporting means being movable between upper and lower positions and being spaced a distance below said rollers in said upper position so as to accommodate a bulb resting upon said supporting means at a position below said rollers;

means for moving said supporting means downwardly from said upper position to said lower position; and,

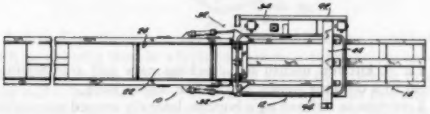
means for rapidly moving said support means upwardly towards said upper position so as to throw the bulbs from said support means towards said rollers to enable the roots to be engaged and removed by said rollers.

3,942,429

METHOD AND APPARATUS FOR FORMING BALES

Roman Schmalz, Milwaukee, and Robert J. Wolf, Waukesha, both of Wis., assignors to Logemann Brothers Company, Milwaukee, Wis.

Filed Jan. 21, 1974, Ser. No. 435,241
Int. Cl.² B65B *13/04*; B30B *9/30*
U.S. Cl. 100—26 **6 Claims**



1. Baling apparatus comprising:

bale compression means including a baling chamber and a compression ram mounted for reciprocal movement therein, said bale compression means further including a pair of pivotally mounted gate members mounted on opposite sides of said baling chamber at the exit thereof, said gate members movable between an operating position and a retracted position, said gate members when in said operating position operable to serve as a partial enclosure of said baling chamber at one end thereof, said gate members when in said retracted position exposing said one end of said baling chamber;

bale strapping means including a bale strapping chamber adjacent said baling chamber, said strapping chamber comprising upper and lower platform members between which material from said baling chamber is progressively forced by said compression ram when said gate members are in operating position to thereby progressively form a bale in said strapping chamber, said bale strapping means further including a strapping mechanism adapted when actuated to apply a plurality of straps to a bale when said gate members are pivoted to retracted position; and

bale take-away conveyor means adapted to receive a strapped bale from said bale strapping means and transfer it from the baling apparatus.

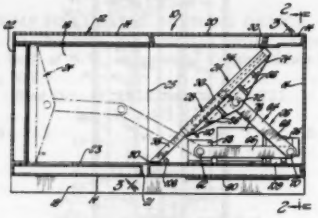
3,942,430

TRASH COMPACTOR

David Roger Day, 32397 Dolly Madison Drive, Apt. 25B, Madison Heights, Mich. 48071, and Lucian Grant McElroy, 2206 Village West Drive North, Lapeer, Mich. 48446

Filed June 10, 1974, Ser. No. 477,787
Int. Cl.² B30B *15/22*
U.S. Cl. 100—52 **37 Claims**

1. A compactor assembly for compacting matter comprising: a housing, compactor plate means within said housing movable along a path of motion between a retracted position and a compacting region for compacting matter wherein said compactor plate means is inclined with respect to the path of motion in said retracted position and moves toward the perpendicular with respect thereto in said compacting region, said compactor plate means including a leading edge and a trailing edge, said edges being in continuous contact with opposite surfaces of said housing, and means mounting said edges for permitting relative movement therebetween to reduce the distance between said edges as said compactor plate means approaches the perpendicular whereby said edges contact the walls of said housing throughout the movement of



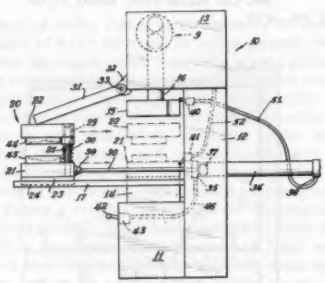
said compactor plate means, and power means for moving said compactor plate means.

3,942,431

PRESS HAVING TRAVELLING DIE SET

Lawrence J. Goff, Parchment, Mich., assignor to General Machine Industries Corporation, Kalamazoo, Mich.

Filed May 1, 1974, Ser. No. 465,730
Int. Cl.² B30B *15/02*
U.S. Cl. 100—53 **5 Claims**

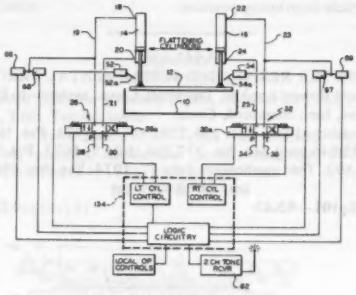


1. In a press comprising a base, a lower bolster fixedly mounted on said base, an upper bolster mounted on said base above said lower bolster for movement vertically with respect thereto, and power means for moving said upper bolster, the improvement comprising a die set having a lower die plate and an upper die plate superposed over said lower die plate and mounted for movement toward and away from said lower die plate, guide means for maintaining said upper and lower die plates in superposition, means biasing said upper and lower die plates to normally spaced-apart position, and means for moving said die set alternatively to a press position intermediate said upper and lower bolsters and to a loading and unloading position removed from said press position, said last named means comprising a slide plate adapted to support said lower die plate, a pair of forwardly projecting parallel rails mounted on top of said lower bolster and underlying said slide plate, said rails extending beyond the front edge of said bolster a distance such that in the loading position, the die set is completely removed from the work area of the press, and die set guide means projecting downwardly from said slide plate into the space between said rails and having outer sides complementary to the inner sides of said parallel rails.

3,942,432
CONTROL SYSTEM FOR A VEHICLE PRESS

Thomas G. Cantine, Jr., R.D. 2, Mt. Pleasant Road, Fulton, N.Y. 13069, and Robert J. Stacy, 7879 Broadfield Road, Manlius, N.Y. 13104

Filed Oct. 15, 1974, Ser. No. 514,594
Int. Cl.² B30B 9/32, 1/32
U.S. Cl. 100—53 5 Claims

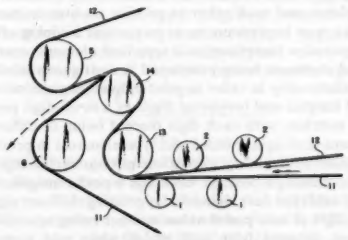


1. A control system for a vehicle crushing press, said press including an elongated base, an elongated pressure head that can be moved vertically toward the base to crush a vehicle positioned thereon and a power unit at each end of the pressure head for moving the latter toward and away from the base; the improvement comprising a lower control and a raise control normally operable to simultaneously actuate the pressure head power units to respectively move the head toward or away from the base, a skew control forming a part of the lower control and operable when actuated to cause alternate actuation of the pressure head power units, means responsive to a build-up of a first predetermined pressure in either power unit to actuate the skew control, means responsive to the build-up of a second and higher predetermined pressure in both power units to render the lower control inoperable and the raise control operable, and means forming a part of the raise control to render the latter inoperable when the pressure head reaches its uppermost position.

3,942,433
ROLLER ARRANGEMENT IN PRESSES FOR THE REMOVAL OF WATER FROM MATERIALS

Alois Wohlfarter, Graz, Austria, assignor to Maschinenfabrik Andritz AG, Austria

Division of Ser. No. 358,598, May 9, 1973. This application July 5, 1974, Ser. No. 486,063
Claims priority, application Austria, July 7, 1972, 5867/72
Int. Cl.² B30B 9/24
U.S. Cl. 100—118 2 Claims



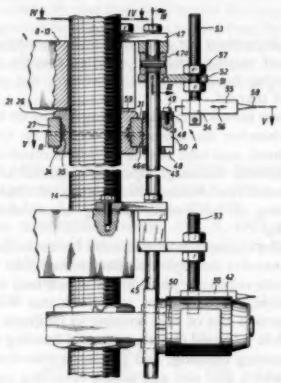
1. In a roller arrangement for removing water from fibrous material in which the material is fed between a pair of endless sieve bands which rotate in contact with upper and lower rollers,

the improvement comprising at least one upper roller contacted by both of said sieve bands and an additional roller mounted directly above said upper roller, and said additional roller having a smaller diameter than said upper roller, whereby said sieve bands pass around said rollers in a Z-shaped path.

3,942,434
DEVICE FOR ADJUSTING THE ROLLER BIGHT OF SUPERIMPOSED ROLLERS OF A CALENDER

Reinhard Wenzel, and Siegfried Reich, both of Tonisvorst, Germany, assignors to Kleinewefers Industrie-Companie GmbH, Krefeld, Germany

Filed Apr. 3, 1974, Ser. No. 457,637
Claims priority, application Germany, Apr. 4, 1973, 2316745
Int. Cl.² B30B 3/04
U.S. Cl. 100—168 11 Claims



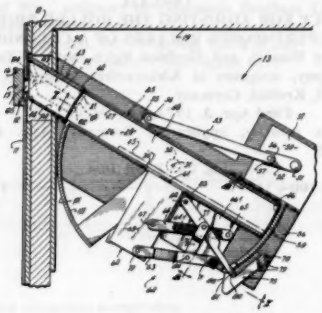
1. A device for adjusting the roller bight of superimposed rollers of a calender, which includes in combination: a plurality of supporting means arranged at both sides of said calender and comprising means for rotatably supporting said rollers, said supporting means being arranged in vertically spaced relationship to each other, continuous spindle means movable upwardly and downwardly and extending through said supporting means for movement therethrough, a plurality of spindle nuts respectively threadedly mounted on said spindle means below the respective supporting means and adjustable relative thereto, and a plurality of sensing means respectively supported by said supporting means and each including a proximity switch with feeler head and also a guiding bar with a marker movably guided on said guiding bar, each of said markers being adjustably connected to the pertaining spindle nut for movement on the pertaining guiding bar.

3,942,435

DEPOSITORY FOR RECEIVING, IMPRINTING AND STORING DEPOSITED ARTICLES OF VARIABLE THICKNESS

Thomas R. Aultz, and Jerome L. Kistner, both of Cincinnati, Ohio, assignors to The Mosler Safe Company, Hamilton, Ohio

Filed Jan. 6, 1975, Ser. No. 539,021
Int. Cl.[2] B41F 17/00
U.S. Cl. 101—44 10 Claims



1. A depository for receiving and imprinting generally flat articles of varying thickness inserted therein, comprising:

a housing having an article-insertion slot provided in one wall thereof,

a hollow tube within said housing having an interior defining a chamber for temporarily storing an article to be imprinted, said tube having an article-receiving opening and an article-discharge opening disposed at opposite ends thereof in communication with said chamber, said tube having an additional opening intermediate its opposite ends,

a mount connected to said tube for mounting said tube for movement through a predetermined path between (a) an article-receiving position, in which said article-receiving opening of said tube communicates with said article-insertion slot of said housing to facilitate insertion of an article into said chamber via said housing slot and article-receiving opening, and (b) an article-discharge position in which said slot and article-receiving opening are non-communicative and said article-discharge opening is disposed lower than said article-receiving opening to facilitate gravity discharge through said article-discharge opening of an article temporarily stored in said tube, said predetermined tube movement path including movement through variable article-imprinting positions whereat different thickness articles are imprinted,

an article imprinter having a printhead aligned with said additional opening in said tube intermediate the opposite ends thereof,

a linkage interconnecting said imprinter and said tube for facilitating movement of said imprinter along a predetermined path between (a) variable inner positions in which said printhead extends through said additional opening varying distances into said chamber to imprint articles of different thickness temporarily stored in said tube, and (b) an outer position in which said printhead is substantially withdrawn from said chamber,

drive means connected to said tube to move said tube from said article-receiving position through said variable article-imprinting positions to said article-discharge position,

a stationary suport within said housing, and

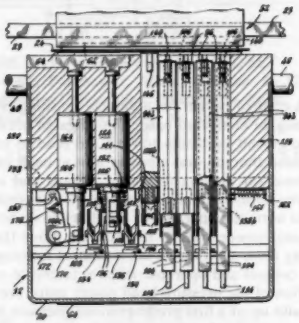
a yieldable means connecting said stationary support and said linkage, said yieldable means being operative prior to yielding to advance said imprinter from its outer position to one of said variable inner positions associated with a predetermined article thickness whereat said printhead imprints an article having said predetermined thickness temporarily stored in said chamber as said drive means moves said tube from said article-receiving position to said one article-imprinting position, said yieldable means being operative to yield as an incident to said imprinting to prevent further advancement of said imprinter relative to said imprinted article while said tube continues to move toward said article-discharge position past said one article-imprinting position.

3,942,436

COMPUTER RESPONSIVE SUPPLEMENTAL PRINTER

Raymond Robert Lupkas, Trumbull, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Division of Ser. Nos. 195,729, Nov. 4, 1971, Pat. No. 3,832,946, and Ser. No. 377,234, July 9, 1973, Pat. No. 3,889,592. This application July 17, 1974, Ser. No. 489,090
Int. Cl.[2] B41J 1/36
U.S. Cl. 101—93.43 4 Claims



1. A flat bed postage printer comprising, in combination:

a plurality of discrete individually spaced print impact segments consisting of more than two said segments;

a flat platen;

means separately mounting each said segment for individual rectilinear movement between a respective home position and a print impacting engagement with said platen;

separate actuating means operatively coupled to each said segment to drive their respective segments from their respective home positions into print impacting engagement with said platen;

separate restoring means operatively coupled to each said segment for returning their respective segments to their respective home positions;

a type face element carried by each said segment in opposed relation to said platen, said segments being arranged such that, upon assuming their respective home positions, most of said type face elements are differentially spaced from said platen and each other to provide an uneven meander-like type impression, so as to prevent a wiping off of an impression therefrom, said type face elements carried by said segments being positioned in contiguous side-by-side relationship in order to print individual portions of a postal insignia and invidivual digits of a multi-digit postal value number, with each digit thereof being of different mathematical significance, said type elements in printing combination providing a complete postage meter impression containing a postage value and a postal insignia, the one of said type face elements for printing the least significant digit of said postal value number being spaced the greatest distance from said platen when said segment carrying it assumes its home position; and

an electrically controlled locking slide member operatively engageable with said segments for controlling the move-

ment of said segments from their respective home positions towards said platen, said slide member being operative between a first segment locking position barring the movement of said segments, and a second position freeing said segments for movement toward said platen, said slide member being normally biased toward said first position, and being electrically driven to said second position incidental to the actuating means becoming operative to drive each segment into printing engagement with the platen.

3,942,437

CHAIN PRINTER

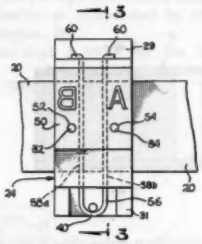
Toshikazu Hatsuse, Tanashi, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed June 17, 1974, Ser. No. 479,608

Claims priority, application Japan, June 30, 1973, 48-77880[U]; Jan. 14, 1974, 49-7594[U]

Int. Cl.² B41J *1/20*

U.S. Cl. 101—111 **7 Claims**



1. A chain printer having a driving pulley comprising:

a flexible, endless belt having first and second sides;

printing slugs coupled to said belt, said slugs having a printing portion extending outwardly from said first side of said belt and upper and lower cantilever members for positioning said slugs on said belt, said cantilever members extending from said printing portion of said slug across said belt to said second side thereof; and

flexible U-shaped spring members for coupling said slugs to said belt, each said U-shaped spring member having first and second spaced-apart leg members, said spring members disposed against said second side of said belt and selectively interlocked in said upper and lower cantilever members, said lower cantilever member having grooves arranged and configured such that each said spring member extends up through said grooves with a section of said spring member remaining in said lower cantilever member, and said upper cantilever member having engaging means for selectively retaining the ends of each said leg member such that said ends may be flexed and selectively released from said upper cantilever member while said section of said spring member in said lower cantilever member remains substantially in place

whereby said belt is disposed between said slugs and said U-shaped spring members.

3,942,438

DYESTUFF APPLICATOR FOR SCREEN PRINTER

Peter Zimmer, Untere Sparchen 54, A 6330 Kufstein, Austria

Filed Feb. 13, 1974, Ser. No. 442,221

Claims priority, application Austria, Feb. 19, 1973, 1438/73

Int. Cl.² B41F *15/42*, *15/46*

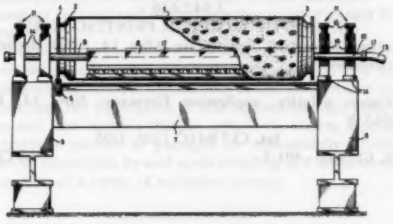
U.S. Cl. 101—119 **12 Claims**

1. In a printing machine, in combination:

a supporting frame;

a cylindrical printing screen rotatable on said frame about a horizontal axis;

a stationary applicator having an elongate hollow body extending axially within said screen, said body having an inlet for liquid dyestuff and further having a bottom portion contacting the inner screen surface, said bottom portion being provided with an elongate outlet for said dyestuff, said body terminating in a pair of extremities projecting generally axially from opposite sides of said screen;



independently adjustable mountings for said extremities disposed on said frame alongside said screen, each of said mountings comprising an elongate sleeve surrounding the respective extremity and fastening means for imparting a generally upward bending moment to said body by fixedly retaining each sleeve in a position of inclination of the engaged extremity with reference to the screen axis; and

cushioning means in said mountings for absorbing oscillations of said extremities.

3,942,439

DYESTUFF APPLICATOR FOR SCREEN PRINTER

Peter Zimmer, Untere Sparchen 54, A 6330 Kufstein, Austria

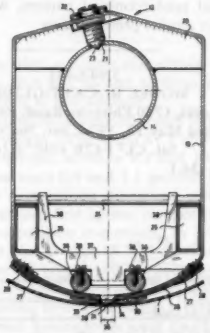
Filed Jan. 3, 1974, Ser. No. 430,389

Claims priority, application Austria, Feb. 5, 1973, 115/73

The portion of the term of this patent subsequent to Nov. 25, 1992, has been disclaimed.

Int. Cl.² B41F *15/40*

U.S. Cl. 101—120 **12 Claims**



1. A dyestuff applicator for a printing machine provided with a perforated cylindrical screen centered on a horizontal axis for rotation therearound, comprising:

a downwardly open housing surrounded by said screen;

a dyestuff-supplying tube opening into the interior of said housing;

a flexible diaphragm extending across the bottom of said housing and hanging down under the weight of an overlying body of dyestuff in said housing toward the nadir of said screen, said diaphragm being provided in a central

region overlying said nadir with at least one row of axially spaced outlet openings; and

a flexible but substantially inextensible reinforcing strip secured to the underside of said diaphragm in said central region, said strip being provided with a median slot registering with said openings and forming a discharge gap for said dyestuff immediately above the nadir of said screen, said diaphragm keeping the width of said slot substantially constant.

3,942,440

METHOD OF MAKING A PRINTING FORM

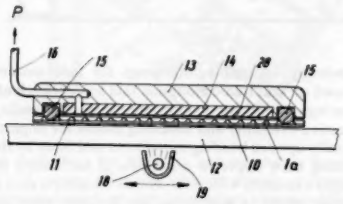
Gerhard Ritzerfeld, Schorlemer Allee 14, 1000 Berlin 33, Germany

Filed Nov. 12, 1973, Ser. No. 415,127

Claims priority, application Germany, Nov. 14, 1972, 2256338

Int. Cl.[2] B41C 1/00, 3/06

U.S. Cl. 101—401.1 38 Claims



1. A method of making a printing form comprising the steps of providing an embossable foil; embossing the foil to form a multiplicity of depressions in one surface which are distributed over said one surface and similarly distributed protuberances which project from the opposite surface of the foil; placing the free ends of said protuberances in contact with an abutment face; differentially heating said foil in accordance with a predetermined pattern and thereby causing differential softening of the foil in accordance with said pattern; and applying to said protuberances a uniform pressure causing at least partial flattening of the protuberances in at least one softened region of said foil to form on said other surface a replica of said predetermined pattern, whereby the foil is converted into a relief printing form.

3,942,441

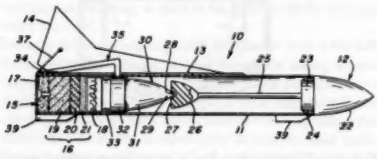
MODEL ROCKET-GLIDER

Walter E. Senoski, 1720 Elderslee Road, Pittsburgh, Pa. 15227

Filed May 13, 1974, Ser. No. 469,438

Int. Cl.[2] F42B 4/08, 4/10

U.S. Cl. 102—34.1 10 Claims



1. A model rocket comprising a body tube, a solid fuel motor having a propellant charge and a blow-out charge mounted in the lower end of the body tube, a first nose cone frictionally engaged in the upper end of the body tube, a second nose cone slidably disposed within the body tube and wings affixed to the body tube, said wings having a hinged elevator formed in the trailing edge thereof, said second nose cone being propelable toward the upper end of the body tube by the ignition of the blow-out charge in said motor after the propellant charge has exhausted, whereby said second nose cone ejects the first nose cone while the rocket is in flight and becomes engaged in the position occupied by the first nose cone, further including means for maintaining said elevator parallel to the horizontal plane of the wings prior to ignition of said blow-out charge and resilient means for biasing said elevator at a predetermined up-angle relative to the top horizontal plane of the wings subsequent to the ignition of said blow-out charge thereby causing the rocket to assume a glider configuration.

3,942,442

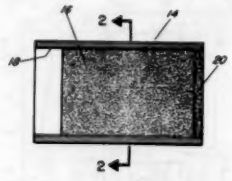
NOVEL DUO-MATERIAL CASE FOR PYROTECHNIC FLARES

Theodor Advokat, Sydney, Australia, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 28, 1974, Ser. No. 484,020

Int. Cl.[2] F42B 4/26

U.S. Cl. 102—37.8 3 Claims



1. A flare comprising a tubular case containing a load of solid pyrotechnic composition comprising a finely divided magnesium fuel and sodium nitrate oxidizer, said case consisting essentially of convolutely wound kraft paper of from about 10 pounds to about 250 pounds weight bonded to aluminum foil of thickness between 0.00035 inch and about 0.0028 inch with an adhesive, said flare exhibiting substantially no chimney effect on burning.

3,942,443

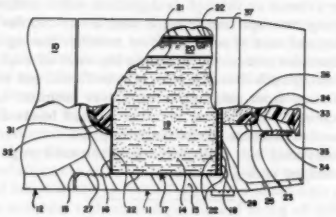
ROCKET ASSISTED PROJECTILE

Bobby J. Lyles, Huntsville, Ala., assignor to Thiokol Corporation, Newtown, Pa.

Continuation of Ser. No. 56,569, July 20, 1970, abandoned. This application July 6, 1973, Ser. No. 377,158

Int. Cl.[2] F42B 15/10

U.S. Cl. 102—49.3 10 Claims



1. In a rocket assisted projectile adapted to be ejected from a rifled gun barrel and comprising, in combination, a warhead and a rocket motor fixedly attached to the aft end of said projectile, said rocket motor comprising a combustion chamber containing only a combustible propellant charge for producing rocket propulsive gases upon combustion of said charge, an exhaust nozzle communicating with said chamber

only during combustion periods for conducting said propulsion gases from said chamber to propel said projectile but closed to said chamber prior to combustion by a rupturable closure, and means for igniting said charge, the improvement comprising:

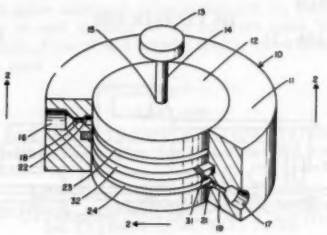
said combustible propellant charge being an uncured slurry of an inorganic oxidizer and a liquid fuel and in the form of a flowable and shapable viscous fluid the volume of which is less than the volume of said chamber so as to provide a free space therein said charge, in response to centrifugal force generated by the rotation of said projectile and rocket motor imparted thereto by the riflings in said gun barrel, flows radially and longitudinally to shape itself into a hollow body of revolution having a central substantially cylindrical structurally fully unsupported core and an outer surface configuration conforming to the inner configuration of said chamber and, said free space being displaced to form said central core.

3,942,444

VARIABLE ENERGY EXPLOSIVE DRIVER

Gordon A. Greene, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 3, 1974, Ser. No. 503,017
Int. Cl.² C06C 5/06
U.S. Cl. 102—70 R **1 Claim**



1. An explosive apparatus for supplying a variable source of energy, comprising:

a first member having an annular shape, rectangular in section, and concentric about a longitudinal axis, and said first member defining a plurality of round chambers therein, each chamber having two opposite ends of increased diameter joined by a central corridor of reduced diameter, said chambers penetrating said annular member, being aligned radially and disposed about the circumference of said annular member in two 180° sectors, the chambers in either of said sectors being longitudinally displaced relative to the chambers in the other sector, said chambers thereby defining two parallel spaced apart planes perpendicular to said longitudinal axis, said annular member also having a groove around the inner circumference, said groove being longitudinally disposed parallel to and between said planes;

a second member having a right circular cylindrical shape, concentrically and coextensively disposed within said first member and having a groove on the outer circumference of said second member, aligned longitudinally with said inner circumferential groove in said first member;

said second member further defining an internal explosive retaining passage leading from a single ignition source, parallel to and spaced from said longitudinal axis, and branching radially to reach the curved surface of said cylindrical second member at two locations which are each coplanar with one of said parallel planes, and continuing in two oppositely directed semicircular channels around said curved surface of said second member, each channel lying in one of said parallel planes;

a locking ring occupying said inner circumferential groove in said first member and said outer circumferential groove in said second member, said ring being formed to frictionally contact said first and second members for constraining said second member within said first member to relative frictional rotation;

an electrically ignited squib fixedly secured to said second member forming said single ignition source;

explosive material filling and retained in said chambers within said first member, and in said explosive retaining passages and channels within said second member;

means for rotating said second member relative to said first member;

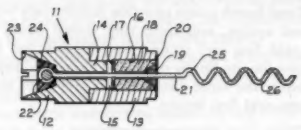
for enabling said explosive retained in said channels on said second member to achieve intimate contact with said explosive retained in any number of said chambers in said first member by rotation of said second member relative to said first member thereby selectively arming a predetermined number of passages for substantially simultaneous detonation by said squib resulting in a single device capable of a range of explosive outputs.

3,942,445

HIGH ALTITUDE FRICTION IGNITER

Charles Baker, Avoca; Benjamin F. Harkness, Odon, and Alfred W. Norris, Bloomington, all of Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 18, 1974, Ser. No. 507,038
Int. Cl.² F42C 7/00
U.S. Cl. 102—70 R **2 Claims**



1. A high altitude friction igniter comprising,

a housing having first and second sections adaptable for movement relative to one another,

a first igniter composition contained within said first section comprised, by weight, of between 87.2 and 90.8 percent of potassium chlorate, between 9.5 and 10.5 percent of charcoal and between 0.9 and 1.1 percent of dextrin,

a second igniter composition contained within said first section adjacent said first igniter composition, said second igniter composition comprised, by weight, of between 43.6 and 46.6 percent of lead dioxide, between 20 and 23 percent of boron and between 33.4 and 39.4 percent of binder, and

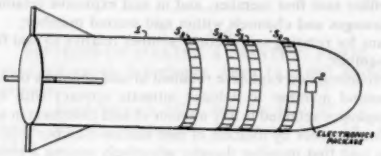
a friction wire passing through said first and second igniter compositions and having both ends thereof extending beyond said compositions, one end of said friction wire being attached to said second section, and a length of wire extending beyond said housing having a coating of scratch mix comprised, by weight, of between 48 and 52 percent of red phosphorus, between 33 and 37 percent of a varnish composition and between 13 and 17 percent of an adhesive composition, whereby relative movement between said first and second sections causes engagement of said scratch mix with said first igniter composition to produce a flash of flame which ignites said second igniter composition.

3,942,446

OPTICAL FUZE AND/OR MISS DISTANCE INDICATOR

Orval R. Cruzan, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 6, 1974, Ser. No. 503,998
Int. Cl.² F42C 13/02
U.S. Cl. 102—70.2 P 6 Claims



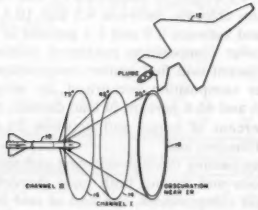
1. An optical target detection system for a missile comprising, a missile having a missile body, and first, second, third and fourth optical ring sensors mounted around the circumference of said body at different longitudinal positions along its length so that the planes of all of the circles defined by said ring sensors are perpendicular to the missile axis, the active sensing regions of said first and second ring sensors being disposed at an angle of 90° to said missile axis therefore forming first and second cones of 90° with respect to said axis having respective apices at first and second points on said axis at the centers of the circles defined by said first and second rings respectively, said third and fourth ring sensors having sensing regions which are disposed at an angle of other than 90° to said missile axis therefore forming third and fourth cones of other than 90° with respect to said axis, said third and fourth sensors being longitudinally positioned along said axis so that the apices of said third and fourth cones coincide respectively with said first and second apices, said third ring sensor being positioned between said first and second ring sensors and said fourth sensor being longitudinally displaced along said axis from said second sensor the same distance that said third sensor is displaced from said first sensor.

3,942,447

FUZING SYSTEM

Kenneth A. Van Orsdel, Corona, and John O. Dick, Riverside, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 18, 1967, Ser. No. 635,297
Int. Cl.² F42B 5/08
U.S. Cl. 102—70.2 P 7 Claims



2. In an optical fuzing system for guided missiles, the combination comprising:

a. a first infrared energy detecting channel for detecting an infrared energy radiating target,

b. a second infrared energy detecting channel for detecting said infrared energy radiating target,

c. a gate circuit coupled to said first and second infrared energy detecting channels for generating a pulse after receipt of a first signal from said first channel and a second pulse from said second channel within a predetermined time interval following receipt of the first signal,

d. fuze firing pulse generating means coupled to said gate circuit for generating a firing pulse in response to an output pulse from said gate circuit,

e. a third detecting channel being responsive to the obscuration of skylight by said target for generating an output signal,

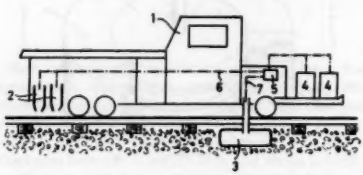
f. computer circuit means coupled to said first, second, and third detecting channels and to said fuze firing pulse generating means and being responsive to an output signal from said third channel to pass the first output signal received from either of said first and second channels to trigger said fuze firing pulse generator to generate a firing pulse.

3,942,448

APPARATUS FOR CONSOLIDATING BALLAST

Olaf Unbehaun, Neunkirchen; Uwe Hampel, Ludwigshafen; Norbert Scholz, Mannheim; Horst Gassmann, Viernheim; Walter Schneider, Ludwigshafen; Heinz Hesser, Hochdorf-Assenheim; Walter Herrmann, Mannheim, and Bertold Bechert, Nuremberg, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed May 24, 1974, Ser. No. 473,174
Claims priority, application Germany, May 26, 1973, 7317950[U]
Int. Cl.² E01B 1/00
U.S. Cl. 104—11 3 Claims



1. Apparatus for tamping ballast and consolidating ballast with liquid binders which comprises:

a. base means mounted on wheels for movement on rails of a train bed;

b. storage means mounted on said base for holding said liquid binder;

c. tamping and ramming units mounted on said base for contacting railroad ballast;

d. a plurality of injection means within and combined with said tamping and ramming units for contacting said ballast with said binder, said injection means including an end piece capable of insertion into said ballast, a plurality of longitudinal ducts within said end piece and nozzle shaped bores in communication with said ducts;

e. conveyor means for delivering said liquid binder from said storage means to said nozzle shaped bores under pressure; and,

f. means for inserting said end piece into and removing said end piece from said ballast.

3,942,449

TRANSPORTATION SYSTEM

Roy A. Nelson, Grand Prairie, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.

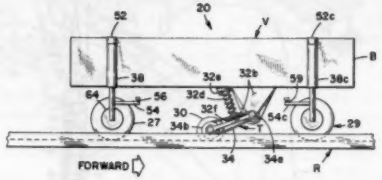
Division of Ser. No. 258,701, June 1, 1972, Pat. No. 3,814,025.
This application Apr. 1, 1974, Ser. No. 457,004
Int. Cl.² E01B 25/22
U.S. Cl. 104—107 8 Claims

1. A self steering vehicle for a transportation system having a roadway comprising a pair of parallel tracks, each of the

tracks having side surfaces extending divergently downwardly from the top center line of the track, the roadway including a pair of longitudinal guide structures, said pair of tracks being positioned between said guide structures, each of said guide structures having a guide surface facing toward the tracks, the vehicle comprising:

a body;

a pair of front wheels and a pair of rear wheels supporting said body, said wheels being rotatable about horizontal



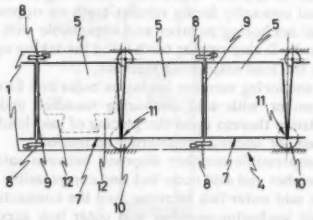
axes and freely turnable about substantially vertical turning axes, the turning axis of each wheel being disposed laterally outwardly of the outer side of the wheel, said wheels having resilient peripheral portions engageable with the tracks of the guideway, said guide surfaces on said guide structures being engageable by the wheels of one of said vehicles on an adjacent track when said wheels of one of said vehicles tend to move outwardly off the track.

3,942,450

OVERHEAD TRANSPORTATION SYSTEM

Carlos Bordons Elorza, Plza. San Juan de la Cruz, 3 Madrid-3, Spain

Filed Sept. 17, 1974, Ser. No. 506,776
Claims priority, application Spain, Apr. 5, 1974, 425042
Int. Cl.² B61B *13/04*; B61C *13/08*
U.S. Cl. 104—121 **5 Claims**



1. An elevated transportation system comprising:

a plurality of vertical support columns positioned spaced along a desired path;

at least one roller track attached to said support columns, said track comprising upper and lower U-shaped elements extending parallel to each other and having open channels facing each other;

a segmented movable train element mounted to move along said track and comprising a plurality of successively pivotally connected compartments;

alternate first junctions, between adjacent of said compartments, comprising pivotal connections about vertical axles at lateral sides of said compartments closest to said track, said first junctions comprising means for accomodating horizontal curves in said track;

alternate second junctions, intermediate said first junctions, between adjacent of said compartments, comprising pivotal connections about horizontal axles at the bottoms of said compartments, said second junctions comprising means for accomodating vertical curves in said track;

each of said vertical axles having at the upper and lower ends thereof guide wheels which respectively ride within and against said upper and lower U-shaped elements of said track; and

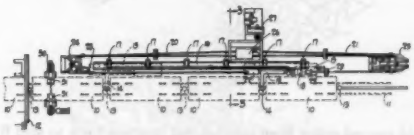
each of said horizontal axles having at the end thereof nearest said track a traction wheel contacting said lower U-shaped element of said track.

3,942,451

MULTIPLE COUPLER ENGAGING HEAD FOR RAILROAD CAR POSITIONER

Francis R. Modliszewski, Chagrin Falls, Ohio, assignor to McDowell-Wellman Engineering Company, Cleveland, Ohio

Filed Dec. 5, 1974, Ser. No. 529,717
Int. Cl.² B61B *9/00*; B61J *3/06*
U.S. Cl. 104—176 **14 Claims**



1. In a railroad car positioning apparatus for moving one or more railroad cars along a track portion and having a carriage disposed for movement parallel to said track portion, means for guiding said carriage alongside said track portion, a car positioner arm carried by said carriage and having a distal extremity dimensioned to be positioned between a pair of coupled railroad cars for force applying engagement therewith centrally thereof, and means for selectively moving said arm into and out of car pushing position, the improvement which comprises in combination on said arm means:

a. first force transferring means on said distal extremity for such force applying engagement between a pair of coupled railroad cars;

b. separate force transferring means on said distal extremity for such force applying engagement with either end of a single uncoupled railroad car;

c. means for shifting said force transferring means selectively to dispose either of them in its operative car pushing position, and the other in a stored inoperative position; and

d. said separate force transmitting means in its stored inoperative position being sufficiently small to allow it to be positioned between coupled railroad cars without interference therewith.

3,942,452

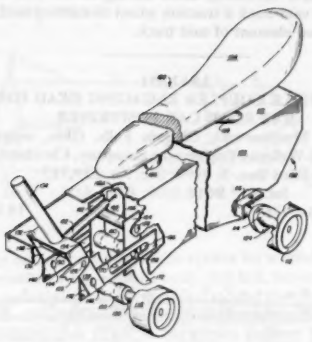
SKI LIFT

Truman C. Peck, Minneapolis, Minn., assignor to Alpine Valley Resort, Inc., Milford, Mich.

Division of Ser. No. 863,642, Oct. 3, 1969, Pat. No. 3,810,427.
This application May 8, 1974, Ser. No. 468,194
Int. Cl.² B61B *12/12*
U.S. Cl. 104—229 **6 Claims**

1. In a ski tow having a track, an endless line, power means to move one reach of said line up a slope, a wheeled seat supported by said track, and means for connecting said seat to said line to move said seat up said slope on said track, the improvement comprising said connecting means including a first rotatable line engaging roller supported in a fixed position relative to said seat, a second rotatable line engaging roller supported on a pivot relative to said seat whereby said second roller is rotatable about its own axis and is movable through an arc about said pivot, said rollers being positioned on opposite sides of said line, manually operated lever means for moving said second roller about said pivot from a first position

in which said line may move through said rollers without moving said seat to a second position in which said line is pinched between said rollers to move said seat up the slope, said manually operable lever means being inoperative to move



said second roller from said second position back to said first position whereby the rider of said seat may control the engagement of said seat to said line but may not disengage said seat from said line.

3,942,453

RAILWAY CAR MIXER FOR THE TRANSPORT OF MOLTEN METALS

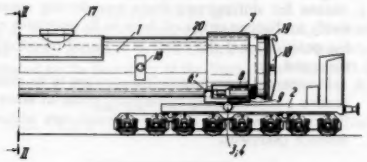
Michael Stabel, and Matthias Scheulen, both of Junkerath, Germany, assignors to Demag, A.G., Germany

Filed Oct. 1, 1974, Ser. No. 511,064

Claims priority, application Germany, Feb. 1, 1974, 24048688

Int. Cl.² B61D 3/00

U.S. Cl. 105—265 8 Claims



1. A mixer-transport apparatus for molten metals or the like comprising

a. a longitudinal, cylindrical vessel having a refractory lining and removable end covers;

b. bearing means journalling said vessel for rotation about the longitudinal axis thereof;

c. support structure means connected to said bearing means for supporting said bearing means and said vessel;

d. underlying wheeled truck means mounting said support structure means;

e. joint means disposed between said truck means and said support structure means accommodating the separation of said support structure means from said underlying truck means; and

f. self-contained drive unit means for rotating said vessel mounted on said support structure means and forming with said vessel, said bearing means and said support structure means, a single structural entity for separation as a whole from said underlying truck means.

3,942,454

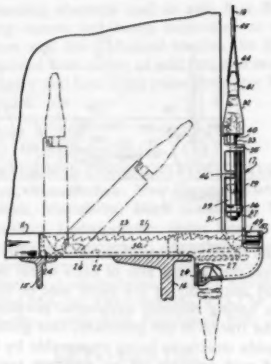
ADJUSTABLE COMPRESSION UNIT AND LADING BAND ANCHOR

Keith W. Broling, Olympia Fields, Ill., assignor to Portec, Inc., Oak Brook, Ill.

Filed June 19, 1974, Ser. No. 480,976

Int. Cl.² B60P 7/10

U.S. Cl. 105—472 15 Claims



1. A tie anchor for anchoring stacked lading to the deck of a flat-decked vehicle, comprising

a load restraining member placing said tie anchor under tension,

a pair of facing channels extending transversely of the deck of the vehicle and having vertically spaced upper and lower legs,

ratchet teeth depending from the upper legs of said channels,

an anchoring member adjustably movable between said channels and resting on the lower legs thereof upon release of tension on the load restraining member,

spaced upwardly facing ratchet teeth on opposite sides of said anchoring member and engageable with said downwardly facing ratchet teeth upon the taking up of tension on the load restraining member,

said anchoring member having an outer link forming a solid member with said anchoring member and extensible relative thereto upon the placing of said load restraining member under a predetermined tension,

a compressible member disposed between said anchoring member and said outer link and compressible as the loads on said outer link increase, and the connection between said anchoring member and outer link accommodating angular movement of said outer link to enable said load restraining member to conform to the load upon longitudinal shifting of the load caused by impacts.

3,942,455

INCINERATOR AND METHOD

Keith H. J. Wallis, 4901 Carmel Club Drive, Charlotte, N.C. 28211

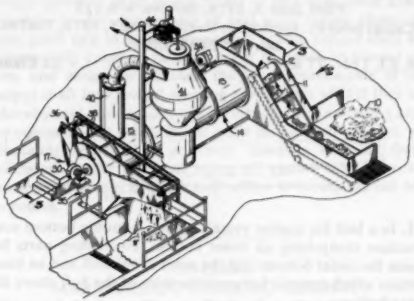
Filed Oct. 29, 1974, Ser. No. 518,703

Int. Cl.² F23G 5/12; F23K 3/14

U.S. Cl. 110—8 C 12 Claims

1. An incinerator for burning combustible debris and comprising elongate combustion chamber means having an entrance end for receiving debris and an exit end for discharging effluent, burner means adjacent said entrance end for igniting debris received into said chamber means, hollow screw conveyor means extending through the length of said chamber means for moving debris therethrough, and fan means opera-

tively communicating with said screw conveyor means for impelling air flow therethrough, said screw conveyor means and said fan means cooperating for distributing throughout



the length of said chamber means air in excess of that required for burning ignited debris so as to facilitate complete incineration thereof as such debris is moved through said chamber means.

3,942,456

RESCUE EQUIPMENT FOR SUBMARINE VEHICLES

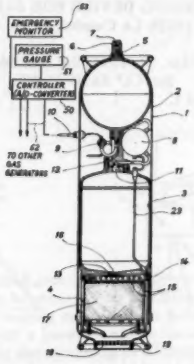
Wolfgang Dinglinger, Oyten, and Eckard Rolf, Bremen, both of Germany, assignors to Erno Raumfahrttechnik, Bremen, Germany

Filed May 15, 1974, Ser. No. 470,014

Claims priority, application Germany, May 16, 1973, 2324709

Int. Cl.[2] B63G *8/24*

U.S. Cl. 114—16 E **12 Claims**



1. Rescue equipment for a submarine vehicle for blowing ballast tanks, the vehicle having a diving depth measuring device, the rescue equipment comprising

a plurality of individual gas generators each constructed for developing a particular amount of gas by chemical reaction or catalytic decompositioning, the generators being located to expell water from the ballast tanks whenever triggered;

control means connected to the depth measuring device and preparing several of the generators for independent but at least approximately concurring operation; but without triggering them, the number of generators prepared for triggering being dependent upon diving depth at the time of an emergency and as determined by the depth measuring device; and

means causing said control means to trigger those of the generators which have been prepared by the control means and independently from the preparation for triggering.

3,942,457

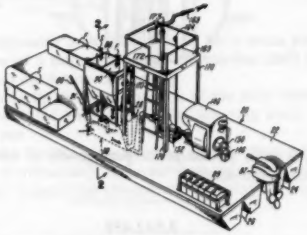
WATER-BORNE CRAFT HAVING MIX TANK OR THE LIKE MOVABLE BETWEEN ELEVATED AND LOWERED POSITIONS

Richard E. Keyes, and Ralph E. Lingert, both of Cincinnati, Ohio, assignors to The Finn Equipment Company, Cincinnati, Ohio

Filed May 20, 1974, Ser. No. 471,355

Int. Cl.[2] A01G *7/00*; B63B *1/12*, *27/26*

U.S. Cl. 114—61 **16 Claims**



15. A water-borne craft which includes a deck having a receptacle-receptive opening therein; a receptacle having bottom, opposite side and end walls, means connecting said receptacle to said deck for selective movement between a fully raised position wherein the bottom wall of the receptacle is disposed at or above the water line of the craft, and a fully lowered position for disposing a portion of the receptacle and the bottom wall submerged beneath said water line, a hopper secured to and carried by said deck, and means for selectively controlling the gravitational discharge of the contents of the hopper into said receptacle.

3,942,458

ELEVATING PILOTHOUSE

Donald Cameron Hankin, Freehold, N.J., assignor to McAllister Brothers Inc., New York, N.Y.

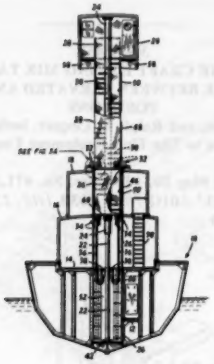
Filed Dec. 19, 1974, Ser. No. 534,225

Int. Cl.[2] B63B *29/02*; B66B *11/00*

U.S. Cl. 114—71 **8 Claims**

1. An hydraulic installation of a water-faring vessel having a plurality of decks and a pilothouse movably mounted atop a deck, the pilothouse having a control panel for receiving control and power cables from a lower deck, comprising a shaftway extending vertically through the decks beneath the pilothouse; a hydraulic jack for elevating the pilothouse above the deck and lowering the pilothouse onto the deck, said hydraulic jack including a plunger fixedly mounted in a vertical position in said shaftway and a cylinder attached to the pilothouse and slidably mounted about said plunger for vertical reciprocating movement thereon; a stairwell mounted beneath the pilothouse for vertical reciprocating movement in said shaftway with said cylinder, said stairwell including means for housing the control and power cables within said stairwell, whereby a weatherproof passageway to and from the pilothouse is provided for the control and power cables; and stairway means located within said stairwell for permitting interior human passage between the pilothouse and at least one deck when the pilothouse is elevated above the deck and for per-

mitting interior human passage between the pilothouse and at least one deck when the pilothouse is lowered onto the deck,



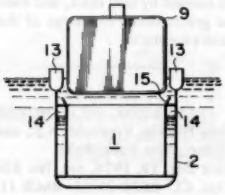
whereby a safe, weatherproof passageway to and from the pilothouse is provided.

3,942,459

METHOD OF CONSTRUCTING LOW TEMPERATURE LIQUEFIED GAS TANKER SHIPS

Toru Sato, Kamakura, Japan, assignor to Bridgestone Liquefied Gas Company, Ltd., Tokyo, Japan

Filed Aug. 16, 1972, Ser. No. 281,003
Claims priority, application Japan, Aug. 17, 1971, 46-62020
Int. Cl.[2] B63B *3/02*
U.S. Cl. 114—74 R 2 Claims



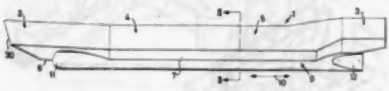
1. A method of mounting at least one tank made of a low-temperature resisting material within the tank hull portion of a floatable vessel having an engine hull portion and said tank hull portion, said tank hull portion being provided with float chambers and said tank being positioned in a hold space defined by the inner walls of the tank hull portion, which comprises, at least partially flooding said tank hull portion, by introducing ballast water into a substantial portion thereof while maintaining a partial air space in said float chambers to suspend the tank hull portion in the water, stabilizing said flooded tank hull portion by suspending said tank hull portion from buoys, floating at least one tank into position over a desired final position with respect to the hold space of said tank hull portion, seating at least one of the tanks into its desired final position within the hold space by draining said float chambers, thereby causing the hull portion to float up to the surface of the water and connecting said tank hull portion with the engine hull portion.

3,942,460

SHIP HULL AND A METHOD OF ASSEMBLING THE SAME

Lennart Ericsson, Goteborg, Sweden, assignor to Trans-Consultants Aktiebolag, Goteborg, Sweden

Filed June 3, 1974, Ser. No. 476,113
Claims priority, application Sweden, June 5, 1973, 7307902
Int. Cl.[2] B63B *3/02*
U.S. Cl. 114—77 R 12 Claims



1. In a hull for marine vessels having a double bottom construction comprising an outer bottom, connecting parts between the outer bottom and the sides of the hull and an inner bottom which extends between the sides of the hull above the outer bottom:

a. at least two buoyant hollow cylinders arranged fore-and-aft in said hull and separated from one another in the athwartships direction;

b. said cylinders constituting an integrated part of the double bottom construction and having substantially the same length as the mid-section of the hull extending between the bow and stern sections of the hull;

c. said cylinders being situated substantially along their full length partly inside the double bottom construction and partly projecting through openings adapted to the cylinders, said openings being located in the double bottom shell plating;

d. the casings of the cylinders being connected to the edges of said openings in a watertight manner; and

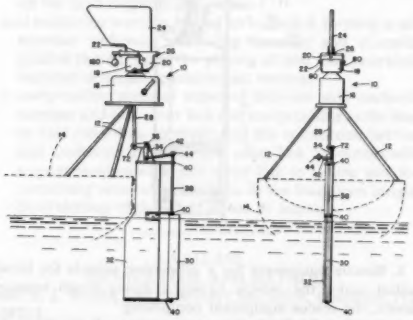
e. the casing portions and end pieces of the cylinders projecting outside said openings being watertight.

3,942,461

SELF-STEERING DEVICE FOR SAIL BOATS

David A. Smith, 14928 La Cumbre Drive, Pacific Palisades, Calif. 90272

Filed Mar. 31, 1975, Ser. No. 563,348
Int. Cl.[2] B63H *25/08*
U.S. Cl. 114—144 C 10 Claims



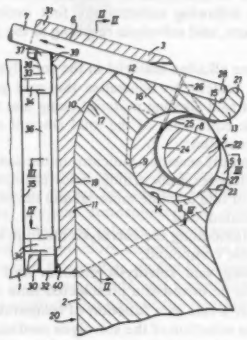
1. In a wind powered self-steering device for sail boats of the type employing a steering rudder and trim tab, a base unit attached to the sail boat, a vane unit mounted for pivotal movements about a vertical axis as respects said base unit, an output shaft mounted for linear movement as respects said base unit, vane support means mounted for pivotal movements about a horizontal pivot axis carried by said vane support unit, vane means including a vane pivot axis carried by said vane support means, said vane pivot axis being perpendic-

ular to the horizontal pivot axis of said vane support means, means to pivot said vane support means to obtain varying angles of tilt of said vane pivot axis between substantially vertical and horizontal positions as respects said base unit, means operable at all angles of tilt of said vane pivot axis to translate pivotal movements of said vane means about said vane pivot axis to linear movements of said output shaft at a substantially constant ratio of linear response to pivotal motion, and means to translate the linear movements of said output shaft into pivotal steering movements of said trim tab, whereby said vane means can be set at a desire steering angle for course and at a desired tilt angle for sea and weather, and thereafter operated to positively translate all wind forces produced by the sail boat being off course into corrective movements of said trim tab and rudder to return the sail boat to course.

3,942,462
MARINE CRAFT STEERING ASSEMBLY

Michael J. Ingham, Epsom, England, assignor to Richmond Marine Limited, Twickenham, England

Filed Dec. 2, 1974, Ser. No. 528,665
Claims priority, application United Kingdom, Dec. 4, 1973, 56246/73
Int. Cl.² B63H 25/06
U.S. Cl. 114—165 19 Claims

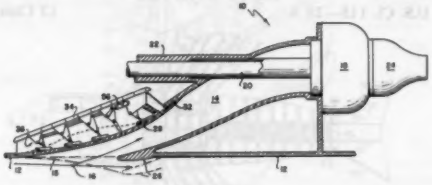


1. A marine craft steering assembly comprising a rudder stock adapted to be mounted on a marine craft for substantially horizontal steering movements; a rudder blade mounted on said stock with a lower portion of said blade projecting below said stock, the mounting of said blade on said stock constraining said blade to partake of the steering movements of said stock and enabling said blade to swing in one direction to move said lower portion rearwardly and upwardly relatively to said stock and in the opposite direction to move said lower portion downwardly and forwardly relatively to said stock, whereby said blade may yield and swing in said one direction to move said lower portion rearwardly and upwardly to a raised position if said lower portion encounters an obstruction when said assembly is in forward motion in the water; biasing means mounted on said stock and biasing said blade to swing the latter in said one direction to move said blade lower portion rearwardly and upwardly to said raised position to clear the obstruction; and manually operable means cooperable with said blade for swinging the latter in said opposite direction to move said blade lower portion to a lowered position.

3,942,463
MOVABLE RAMP INLET FOR WATER JET PROPELLED SHIPS

Virgil E. Johnson, Jr., Gaithersburg; Robert J. Etter, Ellicott City; Horton W. Lain, Severna Park; Larry K. Stephens, Glenelg, and Peter Van Dyke, Baltimore, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 1, 1974, Ser. No. 510,950
Int. Cl.² B63H 11/04
U.S. Cl. 115—11 8 Claims



1. An adjustable inlet flow channel for a water jet propulsion system of a ship mounted in the baseline shell of a ship and to avoid cavitation comprising:

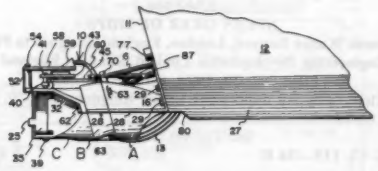
a stationary lip in the aft portion of the inlet substantially flush with the baseline shell for diverting water into the inlet; and

a movable, flexible ramp forming the top of the inlet faired to the baseline shell at the forward end of the inlet and to a pump means inlet channel for adjusting the area of the inlet.

3,942,464
WATER JET PROPELLING APPARATUS FOR BOATS

Harry L. Schoell, 19611 NW. 39th Court, Miami, Fla. 33054

Continuation-in-part of Ser. No. 379,198, July 13, 1973, Pat. No. 3,834,342. This application Aug. 23, 1974, Ser. No. 499,896
Int. Cl.² B63H 11/10
U.S. Cl. 115—12 R 5 Claims



1. A water jet propelling apparatus for boats comprising a housing having an inlet and an outlet, a passageway communicating with said inlet and said outlet, water impelling means mounted in said passageway, a plurality of water deflecting members, pivot means mounting said deflecting members at said outlet, crank pins secured to each of said pivot means, a slide plate mounted for longitudinal sliding movement on said housing, a first cam plate, pivot means securing said cam plate to said slide plate, said cam plate having a first slotted portion substantially symmetrically disposed about said pivot means, said slotted portion receiving said crank pins, a second cam plate secured to said first cam plate in spaced relation to the upper surface of said first cam plate, an upwardly extending pin mounted on said second cam plate, an elongated swing arm, pivot means mounting one end of said swing arm to said housing, a second slotted portion having a recess at each end mounted on said swing arm, said pin being adapted to be received by either of said recesses, and control means mounted at the other end of said swing arm for swinging said swing arm whereby said first cam plate is pivoted to effect a sliding of said crank pins in said first slotted portion and the

pivotal movement of said water deflecting members for steering said boat.

3,942,465

VEHICLE ADAPTED TO BE ADVANCED IN A FLUID

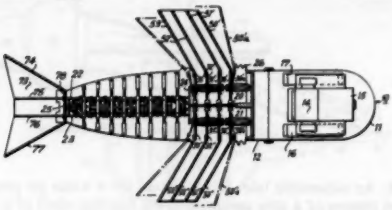
Maurice G. Bouix, 7, rue Sebastien Mercier, 75015, Paris, France

Filed May 21, 1975, Ser. No. 579,721

Claims priority, application France, May 28, 1974, 74.18333

Int. Cl.² B63H 1/30

U.S. Cl. 115—28 A 12 Claims



1. A vehicle adapted to be advanced in a fluid by deforming itself progressively along its length, said vehicle comprising a head including means for compressing a fluid, a body connected to said head and including a flexible and deformable envelope, and means coupled to said fluid compressing means for applying radial and longitudinal forces to said body at spaced locations along the length thereof to form a continuously generated progressive wave along said envelope which serves to propel the vehicle in the fluid, said means for applying the forces including toroidal muscle elements coupled to said envelope and selectively fed with compressed fluid for producing radial forces to deform the envelope radially at said locations and longitudinal muscle elements coupled to said envelope and selectively fed with compressed fluid for producing longitudinal forces to deform the envelope longitudinally at said locations.

3,942,466

STERN GEAR OF SHIPS

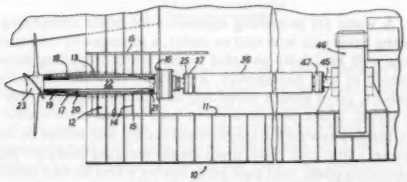
Thomas Walter Bunyan, London, England, assignor to Pilgrim Engineering Developments Limited, London, England

Filed Oct. 29, 1974, Ser. No. 518,637

Claims priority, application United Kingdom, Oct. 29, 1973, 50188/73

Int. Cl.² B63H 5/06

U.S. Cl. 115—34 R 6 Claims



1. In a ship with a hull, a shafting arrangement comprising: a stern tube rigidly mounted in the ship's hull; bearings in the stern tube; a tailshaft supported in said bearings; a flange on said tailshaft; a self-aligning thrust bearing secured to the stern tube, said flange engaging said self-aligning thrust bearing for transmitting thrust from said tailshaft to said stern tube through said thrust bearing; first and second flexible diaphragm couplings, each coupling having a hub and a periphery; a tubular intermediate shaft; and a drive output shaft, the forward end of the tailshaft being coupled to the stern end of the tubular intermediate shaft by the first flexible diaphragm coupling and the other end of the intermediate shaft being coupled to said drive shaft by said second flexible diaphragm coupling.

3,942,467

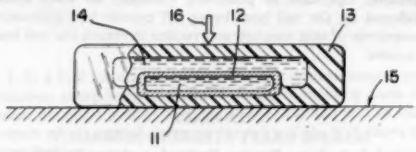
TIME TEMPERATURE INDICATOR

Robert J. Witonsky, Princeton, N.J., assignor to Bio-Medical Sciences, Inc., Fairfield, N.J.

Filed Jan. 21, 1974, Ser. No. 435,067

Int. Cl.² G01K 11/00; G04F 1/00

U.S. Cl. 116—114 V 9 Claims



1. An indicator system in sealed container operable to signal the attainment of at least one preselected value corresponding to an integral of temperature, to which said system has been exposed, as a function of time, operable to permit visual inspection of the color of its contents comprising:

a. solvolysis medium, where the solvolysis medium is an aqueous solvent, in the sealed container;

b. an organic compound in the sealed container which is susceptible to solvolysis by the solvolysis medium said solvolysis following substantially first order kinetics in said medium, said solvolysis resulting in the generation of an acid;

c. at least one alkaline material in the solvolysis medium of sufficient basicity to neutralize the acid generated the amount of said alkaline material being less than the stoichiometric equivalent of the total amount of acid which can be generated;

d. at least one pH sensitive indicator in the sealed container which undergoes a discernible color change between the pH value of said alkaline material and the pH value of the acid generated; and

means for maintaining the solvolysis medium separate from said organic compound;

whereby causing said solvolysis medium and said organic compound to be mixed at a preselected time results in acid generation at a rate as a function of temperature predetermined by the selection of the solvolysis medium and organic compound; said acid being reacted with said alkaline substance the amount of said alkaline substance being selected so as to correspond to the amount of acid generated during a preselected time temperature integral value; thereby resulting in an excess of acid present at the end of such integral causing said discernible color change of the pH sensitive indicator.

3,942,468

BACK PRESSURE OPERATED SOUND TRANSMITTER

Svante Bertil Olofsson, Arlov, Sweden, assignor to Kockums Mekaniska Verkstads Aktiebolag, Arlov, Sweden

Filed Sept. 10, 1974, Ser. No. 504,473

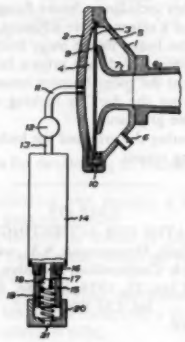
Claims priority, application Sweden, Sept. 24, 1973, 7312952

Int. Cl.² G10K 9/00

U.S. Cl. 116—142 FP 2 Claims

1. A pressure gas driven, back pressure operated sound transmitter, comprising a housing, a back pressure chamber and an inlet chamber in said housing, a diaphragm forming a partition between said back pressure chamber and said inlet chamber, a pressure gas inlet to said inlet chamber, a resonance horn connected to said housing, an inlet end of said resonance horn protruding into said inlet chamber, an annular seat on said inlet end for co-operation with said diaphragm,

said diaphragm being adapted sealingly to abut said seat for disrupting gas communication between said inlet chamber and the interior of said horn and to oscillate away from said seat for establishing such gas communication, throttle passage means forming a constant communication between said inlet chamber and said back pressure chamber, an operating valve, an inlet of said operating valve being connected to said back pressure chamber, damping chamber means, an outlet of said operating valve being connected to said damping chamber



means, and pressure reduction valve means connected to said damping chamber means for venting said damping chamber means to the ambient atmosphere, said damping chamber means having an interior volume at least approximately equal to that of said back pressure chamber so as to ensure proper start of the sound transmitter on the fundamental frequency and with the proper amplitude and maintenance of such frequency and amplitude throughout the operation of the sound transmitter.

3,942,469

VAPOR DEPOSITION NOZZLE

Krishna Simhan, Fischbach, Germany, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 315,394, Dec. 15, 1972, Pat. No. 3,888,649. This application Jan. 14, 1975, Ser. No. 540,928
Int. Cl.² C23C *13/08*
U.S. Cl. 118—48 **4 Claims**

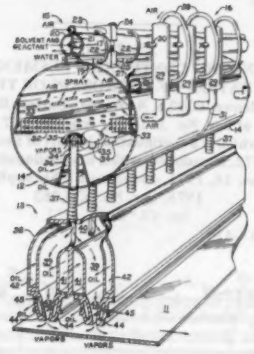
1. An apparatus for applying a coating to a substrate comprising:

a. means for supporting a substrate;

b. means for vaporizing at least one coating reactant;

c. means for delivering said vaporized coating reactant to said substrate over an elongated region transverse to said substrate,

said delivery means comprising a nozzle having an entrance end cross-section and an exit end cross-section that is smaller than the entrance end cross-section and, as viewed at the exit and opening having a first pair of opposed interior sides and a second pair of opposed interior sides, the first pair of opposed interior sides having a length greater than the length of the second pair of interior sides to provide the nozzle with an elongated cross-section and at least the first pair of interior sides having increasing radii of curvature from the entrance end opening to the exit and



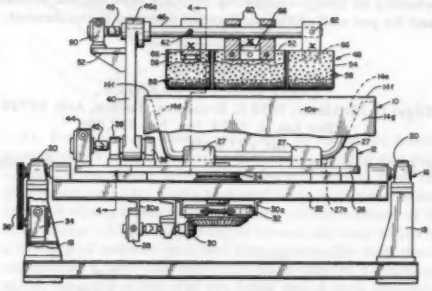
opening to accelerate flow of the gaseous mixture adjacent the interior surface of the nozzle.

3,942,470

DRY PROCESS ENAMEL APPARATUS FOR BATHTUBS

Ralph Fry, Warren, Pa., assignor to Ferro Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 324,327, Jan. 16, 1973, Pat. No. 3,810,250, which is a continuation-in-part of Ser. No. 250,786, May 5, 1972, abandoned. This application Apr. 8, 1974, Ser. No. 458,518
Int. Cl.² B05B *7/14*
U.S. Cl. 118—310 **17 Claims**



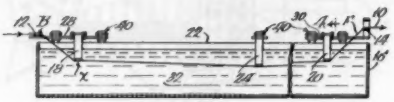
1. Apparatus for applying particulate material to an article having a concavity and associated contigious surfaces, said apparatus comprising a rotatable and tiltable base, means on said base for holding the article to which particulate material is to be applied, support means coacting with said base, particulate material dispensing means mounted on said support means in upwardly spaced and generally overlying relationship with respect to said base, for directing particulate material downwardly onto the article, said dispensing means segmented, and including means for dispensing particulate material from each segment thereof onto the article when said dispensing means is in predetermined operative positional relationship with respect to the article, means associated with each said segment for lapping its deposition over that of an adjacent segment, and means for oscillating said dispensing means with respect to said base for dusting the particulate material through a predetermined range of travel of said dispensing means down onto the article and from an overlying

position with respect thereto, said oscillating means including powered motor means for causing said oscillation of said dispensing means and thus said dusting through said predetermined range.

3,942,471
GALVANIZING CONTINUOUS ELEMENTS WITH PREVENTION OF CORROSION OF THE PAN

William H. Brown, 6200 S. Adams St., Bartonville, Ill. 61607

Division of Ser. No. 372,981, June 25, 1973, Pat. No. 3,881,036, which is a continuation-in-part of Ser. No. 265,793, June 23, 1972, abandoned, which is a continuation of Ser. No. 106,442, Jan. 14, 1971, abandoned. This application Jan. 6, 1975, Ser. No. 538,962
Int. Cl.² B05C *3/12*
U.S. Cl. 118—420 **5 Claims**

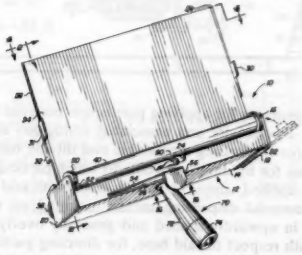


1. In an apparatus for galvanizing an elongated element by drawing it through a molten zinc bath contained in an electrically conductive corrodible container and in which the element is passed over conductive supporting members and beneath conductive sinker members which maintain it submerged within the bath, adjacent the incoming and exit ends of the bath, the improvement comprising means electrically isolating said incoming and exit support and sinker members from electrical contact with the bath container other than through the bath means electrically shorting each pair of said incoming and exit support and sinker members, said means being electrically insulated from said container, and a resistive circuit connecting the portion of said element ahead of said bath with the portion of said element beyond said bath whereby to inhibit circulating currents between the element and the pan wall and to stabilize the potential in the element.

3,942,472
PAINT GUIDE APPARATUS

Edgar O. McAlister, 9810 E. Broadway, Tucson, Ariz. 85710

Filed Jan. 2, 1975, Ser. No. 538,005
Int. Cl.² B05C *11/00*
U.S. Cl. 118—504 **4 Claims**

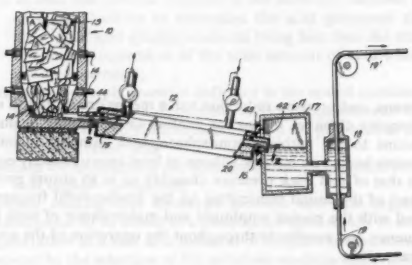


1. Paint guide apparatus having paper movable thereon, comprising, in combination:
roller housing means;
a blade secured to and extending outwardly from the roller housing means and having side edges and a front edge;
handle means adjustably secured to and extending outwardly from the roller housing means oppositely from the blade;
a supply holder connected to the roller housing means on one side of the blade for holding a supply of paper;
a takeup roller in the roller housing means on the other side of the blade to receive paper from the supply holder;
ratchet means connected to the take-up roller to incrementally advance the roller and the paper from the supply holder, around the front edge of the blade, and onto the takeup roller;
brake means disposed against the paper to keep the paper taut around the front edge of the blade;
said ratchet means including a ratchet gear secured to the takeup roller, a spur engaging the ratchet gear, lever means connected to the spur for moving the ratchet gear and the takeup roller, and means for biasing the lever means against movement thereof;
said brake means including a brake flange disposed against the paper and a release lever adjacent the handle means for moving the brake flange away from the paper; and
said handle means including a grip, a face on the grip disposed adjacent the roller housing means, a pin extending outwardly from the face, a locking end cap rotatably secured to the grip, and
rod means securing the grip and the locking end cap to the roller housing means.

3,942,473
APPARATUS FOR ACCRETING COPPER

Charles M. Chodash, Massapequa, N.Y., assignor to Columbia Cable & Electric Corporation, Brooklyn, N.Y.

Filed Jan. 21, 1975, Ser. No. 542,662
Int. Cl.² B05C *3/12*
U.S. Cl. 118—610 **6 Claims**



6. In an apparatus for accreting copper including a fuel fired melting furnace means for melting copper stock and an accreting crucible within which a copper member is drawn through a pool of purified, molten copper, a deoxygenating launder apparatus inclined from said furnace toward said crucible for receiving molten, oxygen contaminated copper from said furnace and depositing said copper melt in purified condition in said crucible, comprising an enclosed, inclined conduit having an internal passage, a plurality of longitudinally spaced-apart baffle members extending transversely across said passage, said baffles including adjacent the floor of said passage flow restricting apertures for the passage therethrough of molten copper, a bed of pulverulent reducing material disposed in said conduit and adapted to float on a stream of copper descending said passage at a level in which portions of said bed extend below said upper edge portions, whereby said baffles prevent downstream movement of said bed while permitting downstream movement of said molten copper through said apertures, the upper surface of said stream being above the level of said apertures and below the upper edge portions of said baffles, and means for heating said conduit to maintain a stream of copper in said passage in a molten condition.

3,942,474

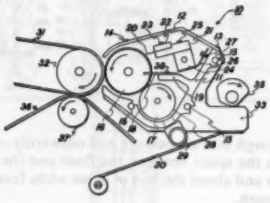
DEVELOPING SYSTEMS

Richard E. Smith, Webster, and Jack R. Oagley, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 313,080, Dec. 7, 1972, abandoned, which is a division of Ser. No. 838,142, July 1, 1969, abandoned. This application Sept. 13, 1974, Ser. No. 505,712

Int. Cl.² G03G *15/06*

U.S. Cl. 118—637 **14 Claims**



1. An apparatus for developing an electrostatic latent image comprising:

1. means for creating and moving a latent electrostatic image on an imaging surface;
2. a developer module in actual or potential registration with a latent electrostatic image on the imaging surface and comprising
   a. a movable path-defining applicator surface having a pattern of lands and valleys to a depth of from about 1.5 mils to about 6 mils;
   b. an aperture in said developer module for selectively effecting transfer by electrostatic attraction of developer material between said applicator surface and a latent electrostatic image on said imaging surface when in register;
   c. developer feeding means within said developer module for applying developer material to the applicator surface;
   d. doctoring means mounted in doctoring arrangement with respect to said applicator surface for maintaining a metering amount of developer on the applicator surface;
   e. means for sequentially moving each part of said applicator surface past the feeding means and doctoring means and into developing configuration through said aperture with said imaging surface; and
3. means for developing engagement and disengagement of the developer module in register with movement of said imaging surface.

3,942,475

DEVICES FOR OESTRUS DETECTION

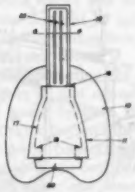
Alexander Wassilieff, Palmerston North, and Patrick Shannon, Hamilton, both of New Zealand, assignors to Delta Plastics Limited, Palmerston North and New Zealand Dairy Board, Wellington, both of, New Zealand

Filed Sept. 26, 1974, Ser. No. 509,408

Int. Cl.² A01K *29/00*

U.S. Cl. 119—1 **5 Claims**

1. An oestrus detection device comprising an indicator carrier of flexible material adapted for attachment to the back of an animal between its hip-bones, an area of flexible material attached to the carrier to form a sleeve which widens toward one end opening, a pair of internal shoulders at the wider end opening, an indicator detachably mounted to the carrier and made of a flexible coloured material having a sachet of differently-coloured flowable material connected through a fine orifice to at least one channel, side wings incorporated with said indicator which cooperates with the internal side shoulders of the sleeve to prevent the indicator sliding from the sleeve, the construction and arrangement being such that when the indicator-mounted carrier is mounted on a cow or other female animal and mating technique by a second animal is made, pressure applied by the second animal upon the



sachet will force the differently-coloured material to flow along the channel or channels of the indicator which extends through the sleeve from its narrower opening and beyond the carrier for observation.

3,942,476

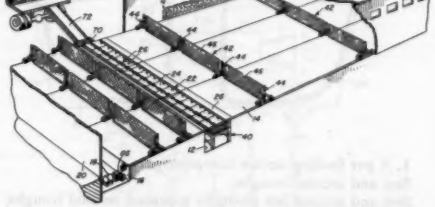
AUTOMATIC COOP LOADER

Alfred Napier, Rte. 1, Farmington, Ark. 72730

Filed Nov. 14, 1974, Ser. No. 523,816

Int. Cl.² A01K *31/00*

U.S. Cl. 119—21 **13 Claims**



11. For use in an animal enclosure, an automatic loading system, said system comprising trap means located at a point within the enclosure, fence means located remote from said trap means and also within said enclosure, and power means engaged with said fence means for selective movement of the fence means along a path of travel toward said trap means for a herding of animals into said trap means, said trap means comprising a series of individual traps aligned transversely across the path of travel of the fence means each trap being operative to receive and confine an approximate predetermined number of animals, said trap means further including a coop associated with each trap with the trap defining a closure for the associated coop.

3,942,477

SANDBOX HORSE TRAINING APPARATUS

William R. Richardson, Phoenix, Ariz., assignor to Valley National Bank, Phoenix, Ariz.

Filed Apr. 9, 1973, Ser. No. 350,133

Int. Cl.² H01K *15/00*

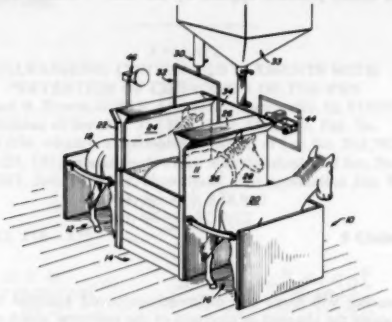
U.S. Cl. 119—29 **8 Claims**

1. Apparatus for training horses, comprising, in combination:

a. an enclosure arranged for confining an untrained animal; and

b. means for filling the enclosure with a loose granular material and covering the untrained animal, the filling means including a pair of spaced panels forming a wall of

the enclosure, and means for moving the innermost of the panels away from a bottom surface of the enclosure and



permitting a loose granular material to flow under the innermost panel and into the enclosure.

3,942,478

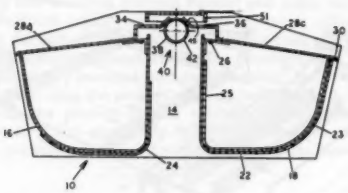
AUTOMATIC PET FEEDING APPARATUS

Derek Lane, 14183 Chalk Hill Road, Healdsburg, Calif. 95448

Filed Jan. 30, 1975, Ser. No. 545,478

Int. Cl.² A01K 5/02

U.S. Cl. 119—51.12 **8 Claims**



1. A pet feeding device comprising:

first and second troughs;

first and second lids pivotally mounted on said troughs;

means biasing said lids toward open position;

first and second cam followers carried on said first and second lids, respectively;

a cylindrical cam surface on a tube rotatable adjacent said first and second troughs engaged by said cam followers to hold said lids in closed position;

means forming first and second arcuate slots in said cam surface in radial alignment with said first and second cam followers so that, when moved beneath said cam followers said slots enable said cam followers to pivot out of engagement with said cam surface as said biasing means open said lids; and

a rotary drive member connected to said tube for moving said cam surface past said followers.

3,942,479

COMBINED VENTILATOR AND FEEDER FOR AVIAN

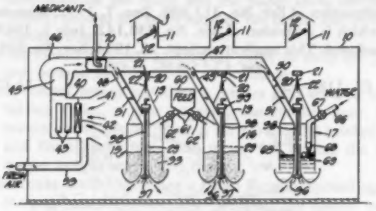
Gilbert L. Powers, 1831 Monterey Road, South Pasadena, Calif. 91030

Filed July 1, 1974, Ser. No. 484,598

Int. Cl.² A01K 39/00

U.S. Cl. 119—52 R **13 Claims**

1. A combination ventilator and fluent material feeder suspendable from an overhead support in a building for avian with the lower feeding end thereof spaced above the building floor, said feeder having a downwardly discharging air supply passage and a storage chamber for fluent material opening into a feeding trough at a convenient feeding height for avian free of obstructions opposite the outer edge thereof, means for supplying fluent material to said storage chamber to maintain said feeding trough filled, and means for circulating air down-



wardly through said air passage and outwardly over the building floor in the space between the floor and the under side of said trough and about the feet of avian while feeding from said feeding trough.

3,942,480

REMOVABLE ARTHROPOD REPELLENT DEVICE FOR ATTACHMENT TO THE EAR OF AN AGRICULTURAL ANIMAL

Jakie A. Hair, and Thomas C. Randolph, both of Stillwater, Okla., assignors to The Board of Regents for the Oklahoma Agricultural and Mechanical Colleges Acting for and on behalf of Oklahoma State University Argriculture & Applied Science, Stillwater, Okla.

Filed Feb. 24, 1975, Ser. No. 552,657

Int. Cl.² A01K 13/00

U.S. Cl. 119—156 **7 Claims**

1. An arthropod repellent device for attachment to the pinnal portion of the ear of an agricultural animal, such as a cow, horse, sheep, goat, swine, or the like, comprising:

a band of pliable plastic material of about ⅝ inch to about 1 ½ inches wide and of about 3/16 inch to about ⅝ inch thick, the material having an arthropod insecticide incorporated therein, the length of the band being sufficient to encompass the base or most thereof of the pinnal portion of the ear of the animal to which it is applied; and

means penetrating the pinna of an animal to retain said band in position around the base of the pinnal portion of the animal's ear.

3,942,481

BLOWDOWN ARRANGEMENT

Robert R. Bennett, Tampa, Fla., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

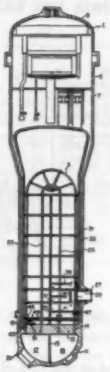
Filed Sept. 18, 1974, Ser. No. 507,162

Int. Cl.² F22B 1/06, 37/54

U.S. Cl. 122—32 **4 Claims**

1. A vapor generator which utilizes a primary fluid to vaporize a secondary fluid, said vapor generator comprising a vertical shell portion, a tube sheet disposed adjacent one end of said shell, a tube bundle formed by a plurality of U-shaped tubes through which the primary fluid flows to form a hot leg portion and a cold leg portion, a wrapper encircling said tubes

and forming an annular chamber between said wrapper and said shell, a flow distribution plate adjacent said tube sheet, said flow distribution plate having a large opening containing a plurality of tubes, said large opening being centrally disposed with respect to said hot leg portion of said tube bundle,



and a blowdown tube disposed between said tube sheet and said distribution plate and generally traversing said large opening, said blowdown tube having a plurality of apertures disposed to remove secondary fluid from an area adjacent said tube sheet.

3,942,482

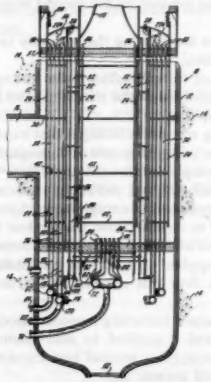
BAYONET TUBE STEAM GENERATOR

Robert O. Barratt, Cedar Knolls; John Polcer, Florham Park, and Richard James Swift, Denville, all of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Oct. 9, 1974, Ser. No. 513,356

Int. Cl.² F22B *1/06, 5/02*

U.S. Cl. 122—32 **5 Claims**



1. A helium heated steam generator comprising:
an outer shell;
a helium intake in said outer shell;
a helium exhaust in said outer shell;
a tube sheet in said outer shell;
an economizer bayonet tube assembly extending upward from said tube sheet;
an evaporator bayonet tube assembly extending upward from said tube sheet;
a superheater bayonet tube assembly extending upward from said tube sheet;
each of said bayonet tube assemblies having an inner tube and a coaxial outer tube of larger diameter, said outer tubes having a closed upper end with said inner tubes extending below the bottoms of said outer tubes, said outer tubes and said inner tubes being joined together at the bottoms of said outer tubes;
a connecting pipe for connecting the space between the inner and outer tubes of said economizer bayonet tube assembly with the space between said inner and outer tubes of said evaporator bayonet tube assembly;
another connecting pipe for connecting the space within the inner tube of said evaporator bayonet tube assembly with the space between the inner and outer tubes of said superheater bayonet tube assembly;
a feedwater lead for supplying feedwater to said economizer bayonet tube assembly; and
a steam outlet in said shell connected with the inner tube of said superheater bayonet tube assembly.

3,942,483

PROCESS FOR REGULATING A STEAM GENERATOR AND A REGULATORY MEANS THEREFOR

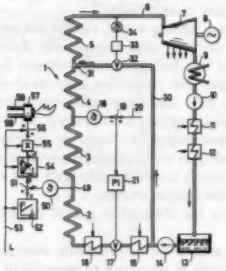
Fritz Laubli, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Mar. 20, 1975, Ser. No. 560,211

Claims priority, application Switzerland, Mar. 22, 1974, 3996/74

Int. Cl.² F23N *5/00;* **F22B** *35/06*

U.S. Cl. 122—448 R **8 Claims**



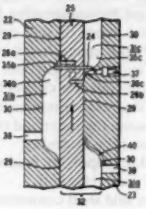
1. A process for regulating a steam generator having a final high-pressure feed-water preheater, an economiser, and a superheater for the flow of a working medium and comprising the steps of
imposing a control signal (L) proportional to a boiler-load on at least one operational magnitude of the steam generator,
measuring the temperature of the working medium at a point in the region of the economiser to form a corresponding measurement signal,
comparing said measurement signal with a load-dependent value signal (U) corresponding to the steady mean proper value of the working medium temperature at said point to form a difference signal (x);
retarding at least one of said measurement signal and said difference signal in a retardation means of at least first order; and
thereafter superimposing the difference signal on said control signal to control the operational magnitude in response to variations in the temperature at said point in the region of the economiser.

3,942,484

IMPELLER TYPE ENGINE

Delbert W. Pile, 113 Ballantine Road, Middletown, N.J. 07748

Filed Sept. 12, 1973, Ser. No. 396,584
Int. Cl.[2] F02B 53/08
U.S. Cl. 123—8.41 22 Claims



1. In an impeller driven engine, the combination comprising:

two oppositely disposed wall members adapted to move in concert with each other;

cam means cooperating with said wall members to form a tunnel, said cam means being stationary with respect to said wall members and including two oppositely disposed cam surfaces equally spaced from each other so as to impart a uniform width to said tunnel and spacially disposed on a curving path so as to impart a serpentine configuration to said tunnel;

impeller means having a web rigidly linking said wall members and dividing said tunnel into individual compartments, said web being located between said cam surfaces on a straight line projecting coextensively with portions thereof so that said compartments alternate with each other in over-lapping relationship on opposite sides of said web and being apertured by at least one elongated slot extending in a direction perpendicular to said line so as to alternately communicate with said compartments as said impeller means moves;

carrier means for transporting said impeller means along said line;

first shuttle means for sequentially sweeping through said compartments in response to movement of said impeller means, said first shuttle means being slidably mounted to reciprocate in said slot and having its periphery in continuous contact with both of said wall members and said cam surfaces so as to form a seal therewith and to divide each compartment into two individual chambers as its sweeps therethrough whereby gaseous material in the chamber ahead of said moving first shuttle means will be compressed and gaseous material in the chamber behind said first shuttle means will be expanded:

means for selectively charging compartments with an explosive gaseous mixture, detonating said gaseous mixture and discharging compartments to exhaust the by-products of said gaseous mixture after it has exploded, and

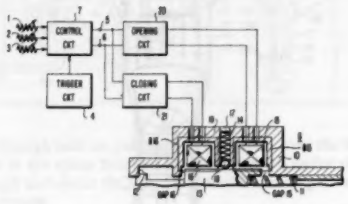
port means for conducting a gaseous mixture compressed in a compression chamber located on one side of said first shuttle means into a combustion chamber located on the other side of said first shuttle means, said port means comprising a passage passing through said web for transitionally connecting said compression and combustion chambers and being wholly contained within said impeller means whereby said passage moves with said impeller and a gaseous mixture compressed in said compression chamber will expand into said combustion chamber when the two are connected by said passage.

3,942,485

FUEL INJECTION APPARATUS

Seiji Suda, Mito, and Tomoji Inui, Katsuta, both of Japan, assignors to Hitachi, Ltd., Japan

Continuation-in-part of Ser. No. 185,056, Sept. 30, 1971, abandoned. This application Dec. 26, 1973, Ser. No. 427,993
Claims priority, application Japan, Oct. 7, 1970, 45-87555
Int. Cl. F02b 3/00; F02m 39/00
U.S. Cl. 123—32 AE 3 Claims



1. A fuel injection apparatus for an internal combustion engine comprising:

housing means;

inlet means, provided at one end of said housing means, for applying fuel to said housing means;

discharging means, provided at the other end of said housing means, for discharging fuel from said housing means;

movable means, having an open position and a closed position and being provided between said inlet and discharging means, for opening and closing said discharging means;

first magnetic coil means for moving the movable means to the open position;

second magnetic coil means for moving the movable means to the closed position;

detent means provided between said first and second magnetic coil means;

a first gap provided between said first magnetic coil means and said movable means through which first magnetic flux created by the first magnetic coil means passes;

a second gap provided between said second magnetic coil means and said movable means through which second magnetic flux created by the second magnetic coil means passes;

a spring means for pushing the movable means toward the closed position;

a control circuit for generating pulse voltages which represent injection timings and the amount of fuel fed from the injection apparatus;

first energizing means including a first capacitor and a first thyristor for energizing said first magnetic coil means in response to a pulse from the control circuit;

second energizing means including a second capacitor and a second thyristor for energizing said second coil means in response to a pulse from the control circuit;

first bias means including a first diode through which direct current is applied to said first magnetic coil means for supplying a first bias current to the first magnetic coil means;

second bias means including a second diode through which direct current is applied to said second magnetic coil means for supplying second bias current to said second magnetic coil means; and

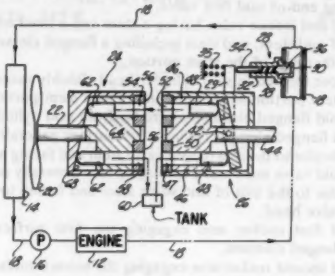
capacitor charging means for charging said first and second capacitors, said capacitor charging means comprising an oscillator circuit including first and second high-voltage windings and first and second rectifiers, the voltage from said first high-voltage winding being applied to the first capacitor through the first rectifier and the voltage from said second high-voltage winding being applied to the second capacitor through the second rectifier.

3,942,486

HYDRAULIC FAN DRIVE SYSTEM SPEED CONTROL

Harold G. Kirchner, Issaquah, Wash., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 21, 1974, Ser. No. 499,240
Int. Cl.² F01P 7/02
U.S. Cl. 123—41.12 1 Claim



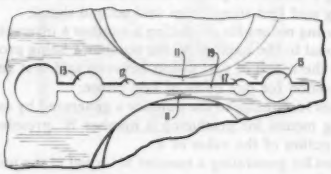
1. In an engine cooling system comprising a radiator, conduit means 18 connecting the radiator with the engine in the closed loop circuit, and a fan 20 for moving air through the radiator: the improvement comprising means for driving the fan at varying speeds related to variations in radiator heat load; said driving means including a variable displacement hydraulic pump 26 having pistons 48 and a swash plate movable about adjustment axis 42 for changing the pumping strokes of the pistons and hence the pump delivery, a fixed displacement hydraulic motor 24 receiving the output of the pump, a drive connection 22 from the motor to the fan, power means for moving the swash plate around adjustment axis 42; said power means comprising a thermostatic power element 28 that includes a contained mass of fusible material 36 transformable over a temperature range between a low volume solid state and a high volume liquid state, and a piston 34 movable in response to volume change in the fusible material, said thermostatic power element having its fusible material in thermal engagement with liquid coolant flowing from the engine to the radiator; and control means 29 connected with the power element piston for directionally moving the swash plate to decrease the pump displacement as the fusible material is transformed from the high volume liquid state to the low volume solid state.

3,942,487

INTERNAL COMBUSTION ENGINE-PREFERABLY OF IN-LINE CONSTRUCTION, ESPECIALLY FOR MOTOR VEHICLES

Anton Zink, Feilbach, Wurttemberg, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Dec. 13, 1968, Ser. No. 783,587
Claims priority, application Germany, Dec. 13, 1967, 1576713
Int. Cl.² F02F 1/14; F02B 75/18
U.S. Cl. 123—41.79 5 Claims



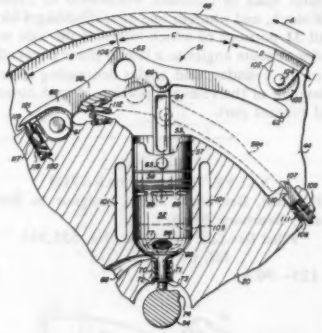
1. An internal combustion engine, especially for motor vehicles, which includes cylinder block means forming with cylinder walls thereof cylinder means cast together at least pair-wise with the cylinder walls in the portion of the cylinder block means disposed between adjacent cylinder means integrally cast together along substantially the entire length thereof, characterized in that the engine is of in-line construction, passage means for cooling water being arranged between the cast-together cylinder means in the area adjacent the surface separating the cylinder block means from a cylinder head, said passage means including narrow slot means, which has a depth corresponding at least approximately to that of a piston ring arrangement of the piston at top dead-center position, intersecting adjacent cooling water spaces and completely separating, in a lateral direction of the cylinder walls, said portion of the cast-together cylinder means, and wherein the slot means extends laterally into the cylinder head bolt bores at the interface between the cylinder block means and the cylinder head.

3,942,488

CAM TRANSMISSION INTERNAL COMBUSTION ENGINE

Howard L. Phillips, P.O. Box 655, Safford, Ariz. 85546, and Maurice J. Moriarty, 3225 W. Suhuaro Drive, Phoenix, Ariz. 85029

Filed Apr. 8, 1974, Ser. No. 458,656
Int. Cl.² F02B 75/22
U.S. Cl. 123—55 AA 2 Claims

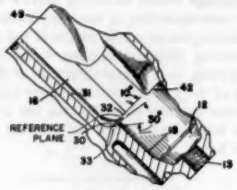


1. An internal combustion engine comprising:
a. a stationary housing;
b. a power shaft journalled for rotation about the longitudinal axis thereof within said housing;
c. a cylinder formed in said housing and having a longitudinal axis radially perpendicular to the axis of said power shaft,
said cylinder having a closed inward end and an open outward end;
d. a piston slidably disposed for reciprocal movement within said cylinder;
e. a drive plate carried by said power shaft;
f. a cam follower carried by said drive plate;
g. a lever arm pivotally connected at one end thereof to said stationary housing and extending circumferentially therefrom across the open end of said cylinder;
h. a cam profile carried by said lever arm for periodic interaction with said cam follower; and
i. a connecting rod pivotally connected at respective ends to said piston and to said lever arm.

3,942,489
TWO-CYCLE PISTON-CYLINDER COMBINATION

James A. Meyer, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Apr. 23, 1974, Ser. No. 463,270
Int. Cl.² F02B 33/07
U.S. Cl. 123—73 PP 4 Claims

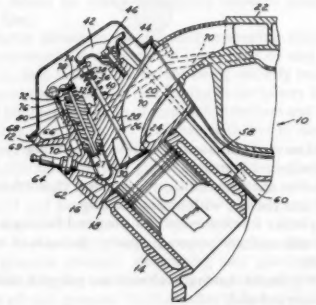


1. A two-cycle internal combustion engine comprising a die castable cylinder block including a crankcase, a cylinder having a head and a cylinder wall extending from said crankcase to said head and a piston adapted for reciprocal movement within said cylinder, an exhaust port through said cylinder wall and a plurality of charge input passages extending from said crankcase into said cylinder, said input passages each comprising an open channel in said cylinder wall, each such channel having wall tapering from said crankcase toward said cylinder head to facilitate withdrawal of casting cores from said block, and wherein one of said passages includes an outer wall 31 portions of which intersect the side wall 18 of the cylinder at acute angles to a lateral plane perpendicular to the axis of the cylinder, said angles decreasing in proportion to the distance of the relevant portion of said outer wall 18 from said exhaust port.

3,942,490
VALVE TRAIN APPARATUS

Donald H. Scott, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 23, 1974, Ser. No. 535,931
Int. Cl.² F01L 1/18
U.S. Cl. 123—90.4 7 Claims

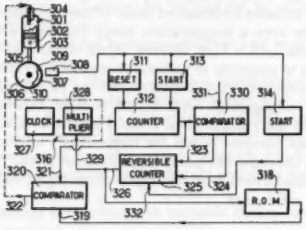


1. Valve train apparatus for an internal combustion engine having a cylinder head,
said apparatus including
first and second poppet-type intake valves slidably mounted in said cylinder head and having end portions protruding therefrom,
a first rocker arm,
first fulcrum means to pivotally mount said rocker arm to said cylinder head,
a second rocker arm,
second fulcrum means mounted to said cylinder head,
one end of said second rocker arm being pivotally mounted to said second fulcrum means, the other end of said second rocker arm engaging the protruding end portion of said first intake valve, an intermediate portion of said second rocker arm being engageable with the protruding end portion of said second intake valve,
said first rocker arm having one end engaging the protruding end of said first valve,
said first intake valve having a stem and a head on one end of said stem, said stem including a flanged element on the other end of the stem portion,
a bore formed in said cylinder head slidably receiving said stem portion so that the end of said stem portion having said flanged element protrudes from said cylinder head,
said flanged element having a first surface generally perpendicular to the axis of said valve stem and facing away from said valve head and a second surface generally perpendicular to the axis of said valve stem and facing toward said valve head,
said first rocker arm engaging the first surface of said flanged element,
said second rocker arm engaging the second surface of said flanged element.

3,942,491
ELECTRONIC IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Guy Seite, and Michel Gauthier, both of Paris, France, assignors to Compteurs Schlumberger, Montrouge, France

Filed Jan. 7, 1974, Ser. No. 431,540
Int. Cl.² F02P 5/04
U.S. Cl. 123—117 R 19 Claims



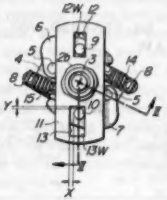
1. An electronic circuit for controlling the ignition means of an internal combustion engine having at least one piston and marker means indicative of a first and a second position of said piston, comprising:
sensor means responsive to said marker means for producing a first and second signal corresponding respectively to the first and the second position,
means responsive to said first and second signal for generating a number N proportional to the time interval separating said first signal from said second signal;
inverting means for producing a number λ inversely proportional to the number N, the number λ being proportional to the speed of said piston between said first and second position for one cycle of said piston;
means responsive to the number λ generated by said inverting means for producing a number N′ preselected as a function of the value of λ;
means for generating a number M′ equal to the product λN; and
means for comparing the number N′ with the number M′, said comparing means delivering an ignition signal when the number M′ is substantially equal to the number N′.

3,942,492

CENTRIFUGAL IGNITION ADVANCER DEVICE FOR AN IGNITION SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Masaru Iguchi, Katsuta, Japan, assignor to Hitachi, Ltd., Japan

Filed Feb. 13, 1975, Ser. No. 549,741
Claims priority, application Japan, Feb. 15, 1974, 49-17569
Int. Cl.² H01H 19/62
U.S. Cl. 123—117 R **3 Claims**



1. A centrifugal ignition advancer device for an ignition system of an internal combustion engine comprising:

a shaft adapted to rotate in conjunction with the operation of the engine;

a pair of weights capable of being displaced by centrifugal forces produced by the rotation of said shaft;

a pair of resilient members each connected to one of said weights so as to restore the respective weights to their original positions against the centrifugal forces, one or the first of said pair of resilient members being higher in spring constant than the other or the second resilient member and connected to the associated weight with a lower initial tension than the second resilient member; and

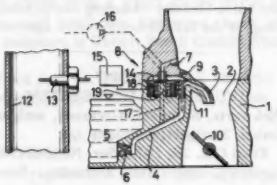
transmission means adapted to cause ignition signal producing means to be displaced in an ignition advance direction relative to said shaft when said weights are displaced either singly or in combination, the ignition signal producing means adapted to be rendered operative to effect ignition advances upon the first weight undergoing displacement when the first weight connected to said first resilient member is displaced and the second weight connected to said second resilient member is not displaced.

3,942,493

FUEL METERING SYSTEM

Ernst Linder, Muhlacker, and Gregor Schuster, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sept. 24, 1973, Ser. No. 399,914
Claims priority, application Germany, Sept. 22, 1972, 2246625
Int. Cl.² F02B 33/00; F02M 7/00
U.S. Cl. 123—119 D **13 Claims**



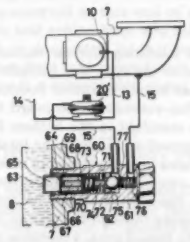
1. In a fuel metering system for internal combustion engines of the type which includes an exhaust system, a suction tube, a fuel reservoir, a flow controlled fuel line leading from the fuel reservoir to the suction tube, a flow controlled air line and a measuring probe disposed in the exhaust system, with the fuel quantity metered out to the air stream in the suction tube depending on the pressures prevailing in the fuel reservoir and in the suction tube, and further on the output signal of the measuring probe, the improvement comprising: a magnetic valve to control the flow in said air line, said magnetic valve including a movable valve member in the form of a membrane which serves as the armature of said magnetic valve; means defining a space in which said magnetic valve is situated and in which the fuel line and the air line terminate; and means connected between said magnetic valve and said measuring probe so that said magnetic valve can be actuated by the output signal from said measuring probe, with said fuel line and said air line being disposed to communicate prior to entry into said suction tube, wherein the air and fuel lines include opposing ends defining valve seats between which said membrane separates and defines with said space defining means a fuel space from an air space.

3,942,494

FUEL SUPPLY SYSTEM FOR INTERNAL COMBUSTION ENGINE

Tadahide Toda, and Takashi Kato, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation-in-part of Ser. No. 304,986, Nov. 9, 1972, abandoned. This application Dec. 3, 1973, Ser. No. 421,039
Claims priority, application Japan, Feb. 1, 1972, 47-10974
Int. Cl.² F02M 7/00
U.S. Cl. 123—119 R **16 Claims**



1. In a system for supplying additional fuel to a fuel-air intake system when an internal combustion engine is accelerated, said system including a fuel source, means for supplying fuel into said intake system, a fuel pipe interconnecting said fuel source and said means, the improvement which comprises means for sensing engine temperature and an acceleration compensator for supplying fuel from said fuel source to said intake system through said fuel pipe and said means in response to changes in pressure in said intake system and comprising:

a diaphragm chamber;

a diaphragm dividing said chamber into a first region and a second region, said first region being connected to said intake system, said second region having therein an inlet port connected to said fuel source through said fuel pipe and an outlet port connected to said intake system through said fuel pipe and said injecting means;

a spring for biasing said diaphragm toward the minimum volume position of the second region;

a check valve means normally closing said fuel pipe, said check valve means opening in response to increase in the volume of said second region to permit inflow from said fuel source to said second region and closing in response to decrease in volume to permit outflow from said second region to said injecting means;

a temperature responsive means blocking expansion of said second region in response to increase of the engine temperature; and

a second valve means for cutting off communication between said intake system and said first region, said second valve means being adapted to cut off the communication at the time the engine temperature is higher than a predetermined value.

3,942,495

ARRANGEMENT FOR HEATING THE SUCTION GASES OF AN INTERNAL COMBUSTION ENGINE

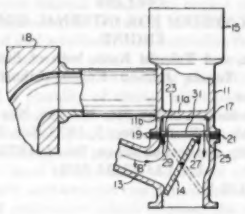
Nobuyuki Kobayashi; Ken Tanoue, and Masahiko Nakada, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Feb. 27, 1974, Ser. No. 446,218

Claims priority, application Japan, Nov. 20, 1973, 48-129675

Int. Cl.² F02M *31/00*

U.S. Cl. 123—122 AC **3 Claims**



1. A heater for incoming fuel-air mixture to an internal combustion engine of the type that includes an intake manifold for said mixture having a bottom floor area; a plurality of heat conducting fins extending downward from the exterior wall of the intake manifold in the bottom floor area; an exhaust manifold disposed underneath the intake manifold adjacent to the finned area for conveying hot combustion products from the engine; a circumscribing wall surrounding the finned area and having a flanged lower face for mating engagement with a flanged opening through the wall of the exhaust manifold underneath the finned area; a partition clamped between the flanged faces of the circumscribing wall and the opening in the wall of the exhaust manifold for enclosing the fins in a chamber defined by the partition, the circumscribing wall, and the exterior wall of the intake manifold, the partition having an inlet port adjacent to one side of the circumscribing wall for introducing the combustion products into the chamber and an outlet port spaced from the inlet port adjacent to the opposite side of the circumscribing wall for exhausting the combustion products from the chamber; a substantially vertical wall extending downward from the flanged opening into the exhaust manifold; and a butterfly type control valve mounted in the exhaust manifold in the way of the opening for rotation about a horizontal axis parallel to the wall between a first position and a second position, the valve when in the first position deflecting the flow of hot combustion gases through the inlet port to contact the fins for heating the intake gases and for returnig the combustion products to the exhaust manifold through the outlet port, the valve when in the second position substantially blocking the opening through the wall of the exhaust manifold to prevent the combustion gases from contacting the fins, and the valve coming into close contact with the wall when the valve is in one of said first and second positions for preventing leakage of the combustion products around the valve when the valve is in said position, wherein the improvement comprises:

said partition being a flat plate and the vertical wall being formed integrally therewith of bent down plate material that originally occupied the area of one of said inlet and outlet ports.

3,942,496

FUEL INJECTION SYSTEM

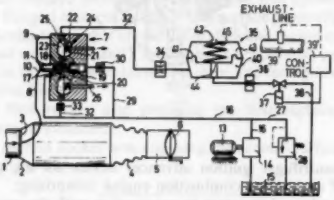
Hermann Eisele, Nellingen, and Gerhard Stumpp, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sept. 23, 1974, Ser. No. 508,564

Claims priority, application Germany, Oct. 3, 1973, 2349631

Int. Cl.² F02D *1/00*

U.S. Cl. 123—139 AW **12 Claims**



1. In a fuel injection system for mixture compressing, externally ignited combustion engines employing continuous injection of fuel into an induction manifold within which are disposed, in series, an air-flow measuring element and an arbitrarily actuatable butterfly valve and where an air-flow measuring element is displaced by and in relation to air-flow, against a resetting force, and thereby moves a movable part of a fuel metering valve assembly including fuel metering valve apertures associated with each engine cylinder, wherein the metering valve assembly meters out fuel in proportion to air quantity while a constant pressure difference prevails at the metering valve apertures, and where the magnitude of the pressure difference may be altered in dependence on motor parameters, the improvement comprising:

a. a first throttle, connected to a fuel supply line;

b. a fuel control pressure circuit, positioned downstream of said first throttle;

c. at least one differential pressure valve, one chamber of which is located in said fuel control pressure circuit downstream of said first throttle;

d. a second throttle, located in said control pressure circuit, downstream of said chamber of said differential pressure valve;

e. a fuel storage unit, located in said fuel control pressure circuit, downstream of said second throttle;

f. a third throttle, located in said fuel control pressure circuit, downstream of said fuel storage unit; and

g. an electromagnetic valve, located in said fuel control pressure circuit, downstream of said third throttle;

whereby the cooperation of the electromagnetic valve, the third throttle, the fuel storage unit and the second throttle may change the fuel pressure in part of the differential pressure valve thereby changing the pressure difference prevailing at the fuel metering valve apertures.

3,942,497

FUEL INJECTION SYSTEM

Reinhard Schwartz, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 29, 1974, Ser. No. 518,988

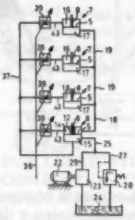
Claims priority, application Germany, Nov. 16, 1973, 2357263

Int. Cl.² F02M *39/00*

U.S. Cl. 123—139 AW **7 Claims**

1. A fuel injection system for mixture compressing, externally ignited internal combustion engines, including:

a. a plurality of fuel injection valves equal in number to the number of engine cylinders;
b. a fuel distributing unit having a plurality of fuel metering valves equal in number to the plurality of fuel injection valves;
c. a plurality of pressure valves equal in number to the plurality of fuel injection valves;
d. means connecting each of said pressure valves to a respective one of said fuel injection valves; and
e. further means connecting each of said pressure valves to a respective one of said fuel metering valves, wherein:
i. each of said pressure valves includes means producing a defined space, and a flexible member which divides the defined space into first and second chambers;
ii. the flow cross section of each of said pressure valves can be changed by its flexible member;
iii. the pressure in the first chamber of each pressure valve is the fuel pressure prevailing downstream of its respective fuel metering valve, said prevailing pressure acting on the flexible member in an opening direction of the pressure valve;



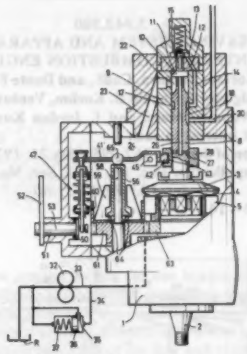
iv. said connecting means and said further connecting means for each pressure valve define with their respective pressure valve a fuel flow path from the fuel metering valve to the fuel injection valve associated with the respective pressure valve;
v. the fuel metering valves determine the fuel quantity flow through the various flow paths by jointly changing their flow cross section;
vi. at least one of said pressure valves is embodied as an equal pressure valve and at least one of said pressure valves is embodied as a differential pressure control valve;
vii. the pressure in the second chamber of the differential pressure control valve is the pressure prevailing upstream of the fuel metering valves;
viii. means are provided so that the first chamber of the differential pressure control valve communicates with the second chamber of each of said equal pressure valves; and
ix. fuel metering occurs at a constant pressure difference due to (i) – (viii).

3,942,498
REGULATOR FOR A FUEL INJECTION PUMP

Franz Eheim, and Wolfgang Fehlmann, both of Stuttgart, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed July 16, 1974, Ser. No. 488,954
Claims priority, application Germany, July 17, 1974, 2336194
Int. Cl.² F02D *1/00*
U.S. Cl. 123—140 R **9 Claims**

1. In an r.p.m. regulator of a fuel injection pump for internal combustion engines, including a fuel supply quantity setting member, a control spring mechanism having a preloaded control spring, a control lever connected to the control spring mechanism and to the fuel supply quantity setting member for actuating said fuel supply quantity setting member, said control lever being pivotably mounted between its connected ends, a setting lever, said control spring being connected to said setting lever and to said control lever thereby applying its preload to said control lever, and an r.p.m.-dependent force applying means engaging said control lever between its ends for applying thereto an r.p.m. dependent force in opposition to the force exerted by said control spring, the improvement comprising:
a. a first connecting member connected to said setting lever; and

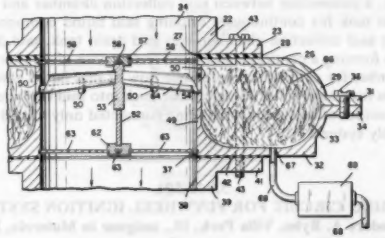


b. a second connecting member connected to said control lever, both said connecting members being part of said control spring mechanism, wherein said first connecting member is connected to that end of said control spring furthest from said setting lever and said second connecting member is connected to that end of said control spring furthest from said control lever, and wherein said control spring is a compression spring.

3,942,499
CARBURETOR IMPROVEMENT SYSTEM AND APPARATUS

I. Jordan Kunik, New York, N.Y.; Ronald E. Koehm, Ventura, Calif., and Dante Fabbri, Woburn, Mass., assignors to I. Jordan Kunik, New York, N.Y.; Ronald E. Koehm, Ventura, Calif. and Dante Fabbri, Woburn, Mass., a part interest to each

Filed July 26, 1973, Ser. No. 382,953
Int. Cl.² F02M *31/00*
U.S. Cl. 123—141 **24 Claims**



1. A carburetor system for an internal combustion engine, including a carburetor and an intake manifold on the engine, comprising a cylinder through which a fuel stream passes longitudinally between said carburetor and said manifold, a collection chamber surrounding said cylinder, a plurality of stationary non flexible spaced, slanted and overlapping blades extending radially from the axial center of said cylinder inter-

mediate said carburetor and said manifold, an upwardly extending flange on the lower radially extending edge of each blade and an aperture in the wall of said cylinder for each of said blades and located opposite the outer end of a corresponding flange, said flange catching liquid components from the fuel stream that flow along the top surface of its corresponding blade and causing said liquid components to flow through its corresponding cylinder aperture into said collection chamber.

3,942,500

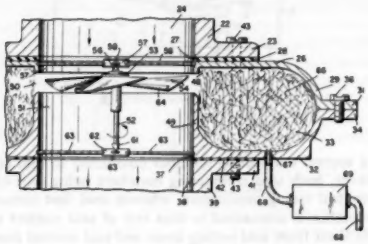
FUEL SAVING SYSTEM AND APPARATUS FOR INTERNAL COMBUSTION ENGINES

Ronald E. Koehm, Ventura, Calif., and Dante Fabbri, Woburn, Mass., assignors to Ronald E. Koehm, Ventura, Calif.; Dante Fabbri, Woburn, Mass. and I. Jordan Kunik, New York, N.Y., part interest to each

Continuation of Ser. No. 362,095, May 21, 1973, abandoned. This application Dec. 11, 1973, Ser. No. 531,471

Int. Cl.² F02M *31/00*

U.S. Cl. 123—141 **18 Claims**



1. A fuel reclaiming system for an internal combustion engine including a carburetor a fuel supply system connected to the upstream intake of the carburetor, an intake manifold on the engine, and a tubular structure forming a fuel passage between said carburetor and said manifold for conducting the fuel stream therebetween, comprising an enclosure forming a collection chamber located externally of said tubular structure and communicating with said passage, a propeller mounted in said passage in the path of and spun by the movement of said fuel stream, a flange on the trailing edge of the blades of said spinning propeller for catching at least a portion of the liquid components of said fuel stream and centrifugally projecting said liquid components into said collection chamber, a drain tank, a connection between said collection chamber and said drain tank for continuously draining said liquid components from said collection chamber into said drain tank, said drain tank forming a continuously closed system with said collection chamber for counteracting reverse flow of said liquid components from said collection chamber back into said fuel stream, the output of said drain tank being connected only to said fuel supply system.

3,942,501

TIMING CIRCUIT FOR FLYWHEEL IGNITION SYSTEM

Theodore A. Byles, Villa Park, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed Nov. 14, 1974, Ser. No. 523,957

Int. Cl.² H02K *21/22*

U.S. Cl. 123—148 CC **8 Claims**

1. An arrangement in a flywheel alternator for use with an electronic ignition system of an internal combustion engine having:

a rotor provided with a plurality of circumferentially located radially polarized permanent magnets;

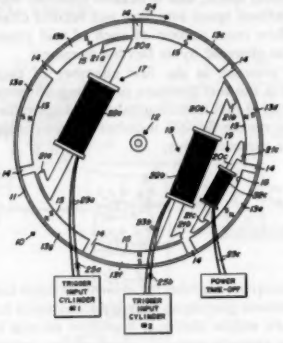
at least one stationary power coil oriented in magnetic circuit relationship to the rotor magnets;

at least one stationary trigger coil oriented in magnetic circuit relationship to the rotor magnets; and

means for electrically coupling the coils to an electronic ignition system

wherein the improvement comprises

the rotor having an odd number of magnets with an adjoining pair of the magnets of the same radial polarity, the remaining adjoining pairs of the magnets of opposite polarity, the trigger coil having a dimension with respect to the permanent magnets to bridge two of the magnets



each of which adjoins a common third one of the magnets, the power coil having a dimension with respect to the magnets to bridge magnets having a North-South or South-North orientation of their radially inward pole faces a number of times equal to one less than the total number of magnets,

whereby in the sequence of magnetic circuits formed by the magnets bridging the trigger coil a unique pulse suitable for firing an electronic ignition system is generated exactly once each flywheel revolution and in the sequence of magnetic circuits formed by the magnets bridging the power coil substantial power is generated.

3,942,502

AIR COMPRESSING FOUR CYCLE RECIPROCATING-PISTON INTERNAL COMBUSTION ENGINE

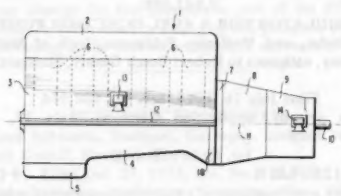
Bruno Gorres, Schanbach; Oswald Schuldt, Korb, and Friedrich H. van Winsen, Kirchheim, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Dec. 11, 1973, Ser. No. 423,819

Claims priority, application Germany, Dec. 13, 1972, 2260798

Int. Cl.² F02F *7/00*

U.S. Cl. 123—195 R **18 Claims**



1. An air-compressing four-cycle reciprocating internal combustion engine to which is flangedly connected transmission housing means by way of clutch housing means which house, respectively, transmission means and clutch means. the

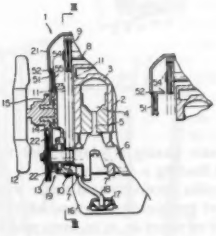
connections between at least two of the parts consisting of the internal combustion engine, the clutch housing means and the transmission housing means are provided with such reinforcement means as to define an oscillatory system having the masses of the internal combustion engine, at least one of the clutch housing means and the transmission housing means, wherein the natural frequencies of said oscillatory system are higher than the frequencies of the oscillations which are excited by the moment of the second order, caused by the oscillating masses of the internal combustion engine, the transmission housing means being substantially box-shaped and including upper wall means inclined with respect to the longitudinal axis of the transmission housing means at least over half the length thereof, rising in the direction toward the clutch housing means, said clutch housing means including upper wall means adjoining the upper wall means of the transmission housing means so that the separating surfaces between the clutch housing means and transmission housing means are extended in the upward direction beyond the space requirements of the clutch and of the transmission means housed within said housing means, and the upper wall means is inclined and subtends with the longitudinal axis thereof at least approximately the same angle of inclination as the upper wall means of the transmission housing means, wherein the angle of inclination which the upper wall means of the transmission housing means subtends with the longitudinal axis, amount to about 20°.

3,942,503

COOLING SYSTEM FOR LUBRICATING OIL IN AN INTERNAL COMBUSTION ENGINE

Masanori Hanaoka, Toyota, and Masao Inagaki, Okazaki, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed June 13, 1974, Ser. No. 479,079
Claims priority, application Japan, Feb. 4, 1974, 49-13612
Int. Cl.² F01M *1/00*
U.S. Cl. 123—196 AB **5 Claims**



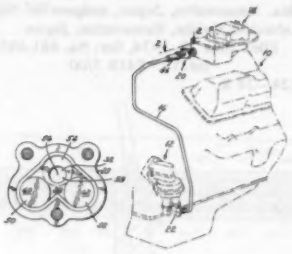
1. In an internal combustion engine of the type having
an oil pump for circulation of lubricating oil, said pump being driven by the crankshaft of said engine, and
a pressure-regulating valve for control of the pressure in said system, said valve having one passageway means for communication with said oil pump and other passageway means for diverting a part of said lubricating oil therethrough from said oil pump to an oil pan located at the bottom of said engine when the pressure of said system exceeds a predetermined value, the improvement comprising:
a cooling system for the lubricating oil in which said other passageway means extends to a position located adjacent to the upper portion of the inner surface of the front wall of the engine casing for directing said part of said lubricating oil to flow downwardly along said inner surface of said relatively cool front wall of said engine casing.

3,942,504

FUEL FLOW SHUT-OFF VALVE

Eric D. Ellsworth, Allen Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 16, 1974, Ser. No. 533,371
Int. Cl.² F16K *17/36*
U.S. Cl. 123—198 DB **7 Claims**



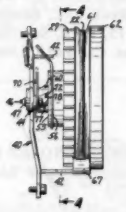
1. A fuel flow control device for use in connection with a motor vehicle engine having a fuel containing line connecting a fuel source to a portion of the engine induction system, the device comprising a housing secured in the line in an upright position connecting two parts of the line and extending essentially at right angles to the direction of fuel flow through the line at that point, the housing having a fuel inlet port axially aligned with a fuel outlet port in the direction of fuel flow, and valve means in the housing movable across at least one of the ports to block flow through the line in response to a predetermined tilting angular movement of the housing in either direction from the upright position upon a corresponding tilting of the engine about its longitudinal axis, said housing having a clover-like shape with a plurality of nodes extending at angles to each other, the ports being located in one of the nodes, the valve means being located in the remaining of the plurality of nodes and movable therefrom into the one node, the valve means comprising a number of valves greater than one and one less than than the number of nodes.

3,942,505

LAWN MOWER STARTING INTERLOCK

Henry B. Tillotson, Minneapolis, Minn., assignor to The Toro Company, Minneapolis, Minn.

Filed Aug. 5, 1974, Ser. No. 494,895
Int. Cl.² G05G *5/08*; F02N *3/02*, *15/06*
U.S. Cl. 123—179 K **9 Claims**



1. Mower starter interlock apparatus for preventing starting of a mower engine of the type in which a starting pinion advances along a path into engagement with a flywheel thereof when a mower is in a predetermined condition, comprising:
a. means defining an annular surface that is fixed with respect to said pinion and concentric about the pinion axis;
b. obstruction means mounted to said engine and actuatable to move into the path of advancement of said starting

pinion and contact said annular surface to prevent engagement of said pinion with said flywheel; and

c. actuator means for sensing the predetermined condition and connected to said obstruction upon sensing of the predetermined condition.

3,942,506

DEMOUNTABLE ARCHERY BOW

Tadao Izuta, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed June 20, 1974, Ser. No. 481,403
Int. Cl.² F41B 5/00
U.S. Cl. 124—24 R **4 Claims**

1. A demountable archery bow comprising a handle, said handle having opposite ends and being provided with receptacles at said ends, limbs mountable in respective said receptacles, a plate spring mounted on one of said limbs extending in part within said corresponding receptacle between said handle and said one of said limbs to stabilize the mounting of said one of said limbs, click stop means connecting said spring plate to said one of said limbs at a position spaced from its associated receptacle and for locking at least one of said limbs releasably in the corresponding receptacle, a string extending between said limbs for being stretched to impel an arrow and, upon being stretched, imparting a stress through said plate spring into said handle, and fastener means securing said plate spring on said one limb at a position within its associated receptacle on that face thereof which is urged against the receptacle by the stretching of said string.

3,942,507

PROCESS OF SIGHTING AN ARCHERY BOW

Edward Opal, 2 Greenlawn Ave., Bainbridge, N.Y. 13733

Filed Apr. 15, 1974, Ser. No. 461,246
Int. Cl.² F41B 5/00
U.S. Cl. 124—30 A **1 Claim**

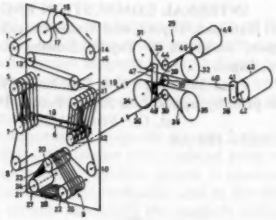
1. In the process of sighting an archery bow string for a plurality of different users, said string comprising a plurality of elongated symmetrically twisted separable strands retained only at its ends the process comprising the steps of providing nubs formed in the shapes of a circular disks and each disk having a plurality of axially extending grooves uniformly spaced about the periphery of said grooves, inserting individual strands of the string within each of said grooves of each disk to separate said strands providing a see-through opening the width and depth of each of said grooves, a first user manually moving the disks along the length of the strand so as to provide a sight suitable for his particular requirements, and a subsequent user manually adjusting the disks along the length of the strand so as to provide a sight opening suitable for his particular requirements.

3,942,508

WIRE-SAW

Hiroshi Shimizu, Tokyo, Japan, assignor to Yasunaga Engineering Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 18, 1974, Ser. No. 534,038
Claims priority, application Japan, Dec. 29, 1973, 49-137; Mar. 30, 1974, 49-36130
Int. Cl.² B28D 1/06
U.S. Cl. 125—16 R **6 Claims**



1. A wire-saw having a sawing wire array, comprising a feeding roller feeding a single wire;

a take-up roller receiving said single wire;

a plurality of guide rollers around which said wire is turned a number of times so as to form said sawing wire array;

a seesaw means with a seesaw lever having seesaw rollers on either end thereof;

a non-displaceable roller associated with each of said seesaw rollers, said single wire passing from said feed roller to one of said seesaw rollers and associated non-displaceable rollers before continuing on to said sawing wire array, said single wire passing from said sawing wire array to the other of said seesaw rollers and associated non-displaceable roller before passing on to said take-up roller;

a driving means reciprocatingly rotating a driving guide roller means which drives a pinion means alternately clockwise and counterclockwise, so as to cause the wire in said sawing wire array to reciprocate;

a mechanical differential means driven by a motor and incorporated within said driving means so as to provide a difference between the clockwise rotation and the counterclockwise rotation of said pinion means such that application of said motor will control the wire feed; and

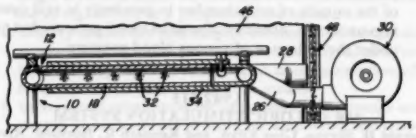
a swinging means causing said seesaw lever to swing in synchronism with said reciprocation of said driving guide roller means so as to prevent the wire from slackening.

3,942,509

COMBINATION AIR INDUCED AND HEAT CIRCULATING LOG GRATE

Glen T. Sasser, 2964 Holly Drive, Tracy, Calif. 95376

Filed July 23, 1974, Ser. No. 490,923
Int. Cl.² F24B 7/00
U.S. Cl. 126—121 5 Claims



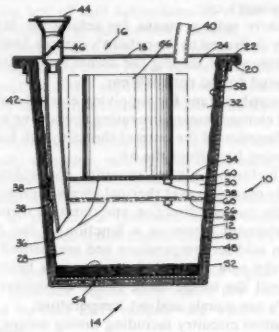
2. A heater for installation in a fireplace comprising a centrally disposed front to rear cold air inlet tube, a pair of front to rear hot air outlet tubes, a header interconnecting the ends of the tubes adjacent the rear of the fireplace, a fan communicated with the front end of the air inlet tube, hot air discharge means at the front ends of the air outlet tubes, said tubes and header being generally horizontally disposed and oriented adjacent the bottom of the fireplace, and means providing controlled discharge of combustion supporting air into the interior of the fireplace adjacent the bottom and from front to rear thereof, and said combustion supporting air discharge means includes a plurality of spaced apertures in each of said tubes with the apertures being spaced along a major portion of the length of each tube, and a sleeve movably mounted on each of said tubes for selectively closing said apertures.

3,942,510

HEATING DEVICE

William Garrett, New York, N.Y., assignor to General Kinetronics, New York, N.Y.

Filed Aug. 21, 1974, Ser. No. 499,329
Int. Cl.² F24J 1/00, 3/04
U.S. Cl. 126—263 14 Claims



1. A unitary, self-contained apparatus for flameless heating which comprises;

a tubular container having at least one closable opening;

a closure for the opening;

a chamber defined by said tubular container and closure;

means for dividing the chamber into a heat-generating zone and a heat-utililzing zone, said means being pervious to heat and gases;

means for venting said heat-utilizing zone to the exterior of said container; and

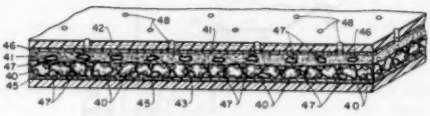
a conduit communicating between the heat-generating zone of said chamber and the exterior of the closed container.

3,942,511

POWDERED METAL SOURCE FOR PRODUCTION OF HEAT AND HYDROGEN GAS

Stanley A. Black, Port Hueneme, and James F. Jenkins, Camarillo, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 19, 1974, Ser. No. 507,652
Int. Cl.² F24J 1/00; C01B 1/07
U.S. Cl. 126—248 12 Claims



1. An electrochemical source for the rapid generation of heat and hydrogen gas upon activation by electrolyte, comprising:

a. an intimate mixture of powdered magnesium and iron metal particles in contact with each other such that the normal electrical contact resistance between said magnesium and iron powdered metal particles is substantially reduced;

b. said iron metal particles being embedded in the surface of at least a substantial portion of said magnesium metal particles to form ironized magnesium particles;

c. each ironized magnesium metal particle forming a shorted micro electrochemical cell;

d. said intimate powdered metal mixture which includes micro electrochemical cells being sandwiched between sheets of plastic material;

e. moisture retaining absorbent means being included with said intimate powdered metal mixture between said sheets of plastic;

f. said intimate mixture of powdered metal particles operable to produce heat and hydrogen by exothermic reaction upon addition of suitable electrolyte;

g. the variation of powder sizes and of the ratio of magnesium to iron metal surface area exposed, operating to control the amount of heat and hydrogen produced and the operational life of said source in the electrolyte.

3,942,512

PHARYNGEAL AND NASOPHARYNGEAL TREATMENT

Edgar R. Hargett, 466 Woodlawn Ave., Springfield, Ohio 45504

Division of Ser. No. 362,791, May 22, 1973, Pat. No. 3,873,721. This application Feb. 12, 1975, Ser. No. 549,179
Int. Cl.² A61B 19/00; A01N 9/24
U.S. Cl. 128—1 R 1 Claim

1. A method of treating conditions of the upper throat comprising:

holding a small amount, approximately half-a-teaspoonful or less, of an aqueous 0.25% solution of dioctyl sodium sulfosuccinate in the mouth,

lying down with the head back, swallowing several times, and holding head in position for approximately 1 minute.

3,942,513

RESPIRATORY DISTRESS STIMULATOR SYSTEM

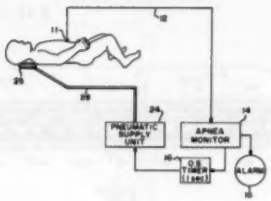
Ulrich Anton Frank, Princeton, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 239,264, March 29, 1972, Pat. No. 3,795,240. This application Jan. 28, 1974, Ser. No. 436,395

The portion of the term of this patent subsequent to Mar. 5, 1991, has been disclaimed.

Int. Cl.² A61B 5/08

U.S. Cl. 128—2 R 16 Claims



1. A patient care system for monitoring and treating respiratory distress problems, comprising:

a. first means for sensing respiratory activity and generating electrical signals corresponding thereto;

b. second means responsive to said respiratory activity signals for detecting a respiratory distress problem; and

c. stimulating means, including fluid-inflatable means adapted for placement under a patient, and responsive to said second means for inducing a startling loss of equilibrium in the patient through a rapid momentary lowering action of a non-oscillatory type of said fluid-inflatable means.

3,942,514

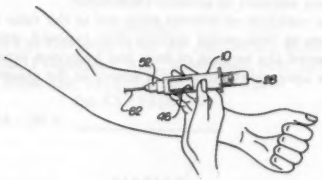
ARTERIAL BLOOD SAMPLING DEVICE WITH INDICATOR

Robert W. Ogle, Newport Beach, Calif., assignor to IMS Limited, S. El Monte, Calif.

Filed Feb. 28, 1974, Ser. No. 446,664

Int. Cl.² A61B 5/00

U.S. Cl. 128—2 F 8 Claims



1. A novel and improved arterial blood sampling device comprising:

an outer barrel having an open end and a closed end,

a thrust portion disposed within said barrel and having a free end in proximity to the open end of said barrel,

a vial having an open end and a closed end,

an imperforate stopper received in said vial,

means associated with said free end of the thrust portion and said stopper attaching said parts together,

a fluid path within said thrust portion and terminating in a sharpened end near the free end of the thrust portion and being adapted to pierce said stopper,

a chamber having side walls extending from the closed end of said barrel and in fluid communication with said fluid path, said side walls containing one or more openings therein,

a resilient ring surrounding the outside of said chamber and normally sealing on the outside of said openings, and

a cannula extending from the free end of said chamber and being in fluid communication with the interior thereof, said cannula having a sharpened scarf at its free end for insertion in an artery, said resilient ring bulging outwardly of the outside of said chamber in proximity to said openings under the influence of arterial blood pressure but not under the influence of venous blood pressure.

3,942,515

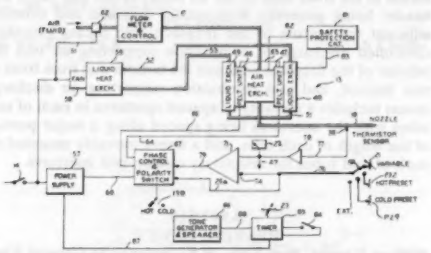
AIR CALORIC STIMULATION SYSTEM

Gerald H. Servos, Glen Ellyn, and Kenneth R. Horning, River Forest, both of Ill., assignors to Instrumentation & Control Systems, Inc., Addison, Ill.

Filed Sept. 11, 1974, Ser. No. 504,864

Int. Cl.² A61B 19/00, 5/05

U.S. Cl. 128—2 R 16 Claims



1. An air caloric stimulation system for eliciting a nystagmus condition in a patient by stimulating the patient's ear with an air stream of controlled temperature,

said system comprising air supply means for supplying air under compression,

nozzle means for applying air from said air supply means to the patient's ear,

temperature setting means for setting the temperature of the air delivered to the patient's ear to a desired set level,

sensor means for sensing the actual temperature of the air delivered to the patient's ear,

power supply means for supplying electrical current,

thermal element means operating responsive to the duration and direction of the current therethrough for supplying or removing heat from the air,

means including control circuitry connecting said power supply means to said thermal element means for controlling the current direction and duration through said thermal element means as a function of the difference between said set temperature and said sensed temperature, whereby said thermal element means heats or cools the air until the temperature of the air delivered to the patient's ear equals said set temperature,

said control circuitry including timing means for indicating the time length of the delivery of the compressed air to the patient's ear.

3,942,516

BIOFEEDBACK TRAINING METHOD AND SYSTEM

Thomas W. Glynn, Beverly, and J. Michael James, Cambridge, both of Mass., assignors to Cyborg Corporation, Boston, Mass.

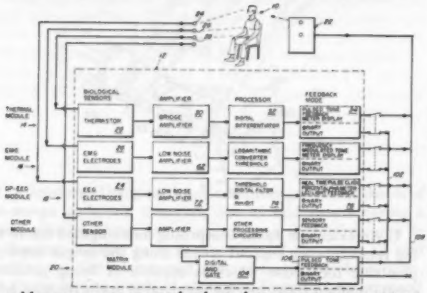
Filed Mar. 18, 1974, Ser. No. 452,215

Int. Cl.² A61B 5/04; G09B 19/00

U.S. Cl. 128—2.1 B 1 Claim

1. A closed loop system for use in the biofeedback training of a subject, comprising

a. a plurality of discrete subsystems each adapted to monitor a different physiological function of said subject and generate status signals with respect thereto,
b. a discrete biological sensor connected to each subsystem and adapted to be connected to said subject,
c. matrix means connected to all of said subsystems for logically processing said status signals and generating a single feedback signal when at least two different selected status signals are at a predetermined value,
d. sensory means for said subject connected to said matrix means and adapted to produce a sensory signal as a feedback sensory input to said subject upon generation of a feedback signal from said matrix means,
e. each of said subsystems including amplifying means connected to each of said sensors for amplifying the output thereof, and analog to digital converting means connected to said amplifying means for converting analog signals from said amplifying means to digital signals for said matrix means,.
f. each of said subsystems including binary output means for said matrix means and said matrix means includes a logical AND gate connected to each of said subsystems and



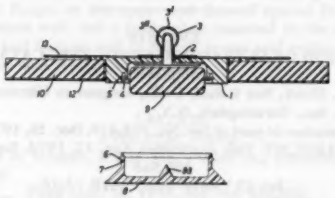
said sensory means and adapted to generate an output feedback signal only when predetermined status signals are at a predetermined value, and,
g. switching means between each of said subsystems, said matrix means and said sensory means for selectively connecting any of said subsystems to either said matrix means or directly to said sensory means,
h. said subsystems including a thermal module adapted to detect temperature differences between spaced points on said subject, an EMG module adapted to detect muscular activity of said subject and an EEG module adapted to detect brain wave activity of said subject,
i. said thermal module including a digital differentiator for periodically sampling, storing and comparing status signals processed by said thermal module,
j. said EMG module including a logarithmic converter adapted to provide a feedback signal logarithmically proportional to the status signals processed by said EMG module,
k. said EEG module including a threshold digital filter providing a feedback signal only when the status signals processed by said EEG module are within a predetermined value.

3,942,517
ELECTRODES

Leslie Reginald Bowles, Dunkirk, and Roy Albert Heath-Coleman, Ivy Hatch, both of England, assignors to Dracard Limited, Maidstone, England

Filed May 28, 1974, Ser. No. 473,932
Claims priority, application United Kingdom, Dec. 3, 1973, 55939/73
Int. Cl.² A61B *5/04*
U.S. Cl. 128—2.1 E **6 Claims**

1. A pre-gelled electrode, comprising a resilient non-conductive gel-container having on one side thereof a cavity adapted to open to the skin of a patient, an annular groove surrounding said cavity and adapted to open to the skin of a patient, said annular groove forming an inner wall and an outer wall and having on at least one of said walls another groove, and a central aperture communicating between said cavity and the side of said gel-container opposite said cavity; a conductive gel within said cavity; a metal contact in conductive connection with said gel and passing through said gel-container from said cavity to the side of said gel-container opposite said cavity, said metal contact including a metal fastener projecting from said cavity through said central aperture and a hollow metal stud located on the side of said gel-container opposite said cavity and receiving said metal fastener, wherein said metal fastener and said hollow metal stud seal said central

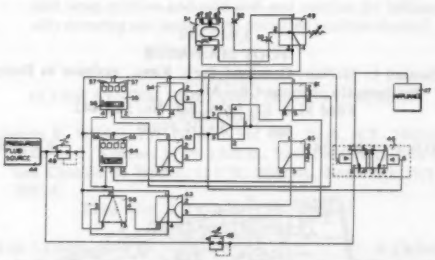


aperture in said gel-container, said hollow metal stud containing chemical means for preventing said gel from contacting that portion of said metal fastener within said hollow metal stud, whereby chemical attack or corrosion of that portion of said metal fastener within said hollow metal stud is prevented; a removable cap covering said cavity, said cap having a skirt portion with a circumferential lip, said skirt portion engaging both said inner wall and said outer wall of said annular groove and said lip engaging said another groove, whereby said cap covers and hermetically seals said cavity to ensure sterility and prevent dehydration of said gel; means adjacent said gel-container for attaching said gel-container to the skin of a patient after the removal of said cap; and means for controlling the flow of said gel onto the skin of a patient after the removal of said cap.

3,942,518
THERAPEUTIC INTERMITTENT COMPRESSION APPARATUS

Ansis U. Tenteris; Bruce W. Wetzel, and Dennis G. Mosiniak, all of Toledo, Ohio, assignors to Jobst Institute, Inc., Toledo, Ohio

Filed Mar. 18, 1974, Ser. No. 451,955
Int. Cl.² A61H *1/00*; E03B *3/00*
U.S. Cl. 128—24 R **21 Claims**



1. Therapeutic compression apparatus for intermittently supplying fluid under pressure to an appliance enveloping a portion of a body to be treated, comprising:
a source of fluid under pressure;
timing means actuated by said fluid under pressure including a first fluid driven timer for generating a first signal during a predetermined on time interval of adjustable

duration, a second fluid driven timer for generating a second signal during a a predetermined off time interval of adjustable duration, and a timing control means actuated by said fluid under pressure in response to said timing signals to alternately actuate said first and second timers;

first means for applying fluid from said source to said timing means at a first pressure;

second means for applying fluid from said source to said appliance at a second pressure different and independently adjustable from said first pressure; and

appliance control valve means responsive to said first signal for connecting said second means for applying fluid from said source to said appliance and responsive to said second signal for venting said appliance to the atmosphere.

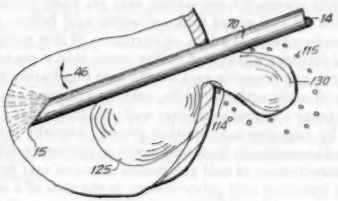
3,942,519
METHOD OF ULTRASONIC CRYOGENIC CATARACT REMOVAL

John P. Shock, San Rafael, Calif., assignor to Ultrasonic Systems, Inc., Farmingdale, N.Y.

Continuation-in-part of Ser. No. 318,429, Dec. 26, 1972, Pat. No. 3,857,387. This application Aug. 12, 1974, Ser. No. 496,565

Int. Cl.² A61F 9/00; A61B 17/36

U.S. Cl. 128—24 A **59 Claims**



1. The method of removing a mass of unwanted tissue from an enclosed area in an animal with a tool member having an output edge, comprising the steps of:

A. forming an incision in an area proximate to the mass of unwanted tissue,

B. freezing the mass of unwanted tissue,

C. defrosting the mass of unwanted tissue,

D. reducing the size of the mass in its enclosed area by engaging the output edge of the tool member against the mass and ultrasonically vibrating the output edge, and

E. removing the reduced mass from the incision.

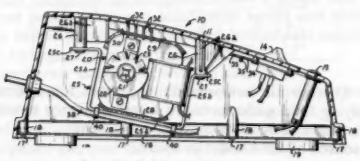
3,942,520
FOOT MASSAGER

Samuel L. McNair, Overland Park, Kans., assignor to Dazey Products Co., Kansas City, Mo.

Filed Mar. 27, 1975, Ser. No. 562,442

Int. Cl.² A61H 29/00

U.S. Cl. 128—24.1 **6 Claims**



1. A foot massager comprising

a casing having a top panel adapted to support a pair of feet;

a vibrator assembly located within said casing and including a motor operable to effect vibration of said top panel;

a rigid, elongate strap for mounting said motor against said top panel, said strap having opposite ends spaced apart from one another and an intermediate portion adapted to engage the bottom side of said motor;

means for securing the opposite ends of said strap to said top panel with the top side of said motor bearing tightly against said top panel and said intermediate strap portion bearing tightly against the bottom side of said motor; and

lug means extending from said top panel for retaining said motor against lateral movement.

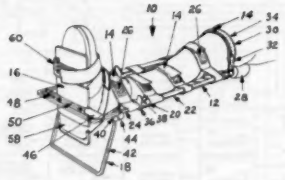
3,942,521
EXTENSION SPLINT

Allen Pummill Klippel, Clayton, Mo., assignor to Rescue Products, Inc., Bridgeton, Mo.

Filed Aug. 6, 1974, Ser. No. 495,158

Int. Cl.² A61F 5/04

U.S. Cl. 128—85 **12 Claims**



1. An extension splint comprising an elongated frame having releasable leg support means along the length thereof, a pivotable foot plate which is capable of being positioned substantially normal to a leg received in said extension splint, a pivotable frame brace extending beneath the frame to support the foot plate above a supporting surface on which the frame rests, and means for applying an extension force to a leg above the foot plate while said leg and foot are held in supported position by said aforementioned components, said last mentioned means including longitudinal frame extension means having manually releasable and incrementally adjustable locking means including generally longitudinally operable extension means and generally transversely operable retraction means.

3,942,522
SURGICAL SPLINTS AND MATERIALS THEREFOR

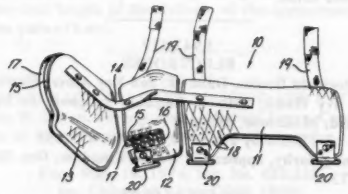
Alexander Bruce Kinnier Wilson, Chesham, England, assignor to National Research Development Corporation, London, England

Filed Oct. 11, 1974, Ser. No. 514,317

Claims priority, application United Kingdom, Oct. 19, 1973, 48910/73

Int. Cl.² A61F 5/04

U.S. Cl. 128—90 **10 Claims**



1. A redeformable surgical splint of the type having a concave inner face for placement adjacent to the body of a pa-

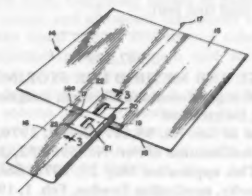
tient, a convex outer face and a predetermined thickness, said splint comprising a layer of resilient plastics material having a first surface defining said inner face, a bendable metal mesh reinforcement embedded in said layer to extend in said layer adjacent to said inner face, said layer having a second surface defining said outer face which is spaced a greater distance from said bendable metal mesh than said inner face.

3,942,523

REINFORCED DOUBLE-FENESTRATED SURGICAL DRAPE

Helen T. Rudtke, Medford, N.Y., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Jan. 17, 1975, Ser. No. 541,870
Int. Cl.² A61F 13/00
U.S. Cl. 128—132 D **7 Claims**



1. A reinforced surgical drape comprising a pair of sheets of non-woven cellulosic material, one of said sheets having a narrow portion along one marginal edge thereof secured in overlapping relation to a like portion of the other of said sheets to provide a laminated zone of mutual reinforcement, said sheets having a pair of elongated fenestrations arranged in longitudinal alignment on opposite sides of said zone, each sheet having its fenestration immediately adjacent to the said marginal edge of the other sheet secured thereto.

3,942,524

EMERGENCY BREATHER APPARATUS

Yi-Sheng Li, San Mateo; Eugene N. Perry, Sunnyvale; Robert B. Jagow, San Jose, and Phillip A. Wagner, Sunnyvale, all of Calif., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Nov. 8, 1974, Ser. No. 522,169
Int. Cl.² A62B 7/08
U.S. Cl. 128—147 **6 Claims**

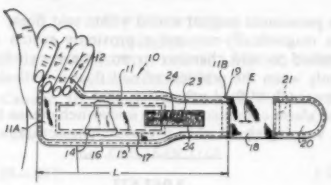
1. An emergency breather apparatus, comprising;
a cannister having an inlet and an outlet; chemical bed means within said cannister to absorb Co_2 and release oxygen when the exhaled breath from a user wearing the apparatus passes therethrough; the chemical bed means capable of partially liquifying upon contact with the exhaled breath from a user; an inhalation chimney carried by said cannister; means wearable by a user for collecting exhaled breath, and furnishing air for inhalation, the exhalation side of said means being connected with the inlet of said cannister, and the inhalation side thereof being connected with one end of said inhalation chimney; and a breather bag carried by said cannister and connecting said outlet with the other end of said chimney, wherein said cannister includes a generally flat bottom wall and said outlet comprises an opening in said bottom wall including means mounted at said outlet for collecting liquified chemical bed means to prevent its passage into said breather bag; said collecting means including a sleeve secured within said outlet and including an external flange on the upper end thereof spaced from said bottom wall, and a baffle plate mounted on the exterior of said bottom wall to extend across said outlet, spaced from said bottom wall.

3,942,525

ATHLETIC WRAP

William B. Dragan, R.F.D. No. 1 Burr St., Fairfield, Conn. 06430

Filed Mar. 10, 1975, Ser. No. 556,806
Int. Cl.² A61F 13/00
U.S. Cl. 128—165 **18 Claims**



1. An athletic wrap comprising:
a wrap portion adapted to encircle the portion of the body at least once,
a tongue connected to said wrap portion adjacent one end thereof to facilitate the holding of said one end during a wrapping operation,
said tongue projecting to one side of said wrap portion,
a pull end portion,
an elastic intermediate portion interconnecting said pull end portion to said wrap portion,
and complementary readily releaseable fastening means in said wrap portion and said pull end portion for releaseably securing said wrap in the encircled position thereof.

3,942,526

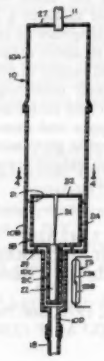
ALARM SYSTEM FOR INTRAVENOUS INFUSION PROCEDURE

Joseph R. Wilder, 151 W. 86th St., New York, N.Y. 10024; Maurice S. Kanbar, 34 W. 13th St., New York, N.Y. 10011, and Cynthia K. Wilder, 151 W. 86th St., New York, N.Y. 10024

Filed Mar. 3, 1972, Ser. No. 231,601
Int. Cl.² A61M 5/14
U.S. Cl. 128—214 E **6 Claims**

1. An intravenous infusion arrangement comprising a container; a drop chamber, provided with a drip tube, fluid from said container being conducted by gravity flow into said drop chamber to produce a fluid pool therein and from the chamber through a pipe leading to a hollow needle; and an alarm system to provide a warning signal when the fluid supply from the container approaches exhaustion, said system including:

a. a float disposed in said chamber which is caused to assume a position therein depending on the depth of said pool, the float having transverse dimensions which are smaller than those of the chamber interior to define a space therebetween which provides an uninterrupted flow passage to said pipe regardless of the position of the float, said chamber having a collapsible upper section and a rigid lower section,



b. a permanent magnet sealed within said float,
c. a magnetically-responsive proximity switch means attached to said chamber to produce a switching action only when the position of said float is indicative of the approach of fluid exhaustion, and
d. an alarm circuit coupled to said switch means to produce a warning signal when said switching action occurs.

3,942,527

BLOOD OXYGENATION PROCESS

Norman N. Li, Edison, N.J., assignor to Exxon Research & Engineering Co., Linden, N.J.

Continuation of Ser. No. 234,644, March 14, 1972, abandoned. This application Jan. 15, 1974, Ser. No. 433,573
Int. Cl.² A61M 1/03; C12B 3/00, 9/00
U.S. Cl. 128—214 R 8 Claims

1. A process for oxygenating human blood and simultaneously removing CO_2 which comprises separating venous blood from a human body by shunting said venous blood prior to its return to the heart, contacting said shunted blood in a contacting zone, with an emulsion, the exterior phase which is liquid at a temperature of from 4° to 35°C and which comprises a C_1 to C_{40} fluorinated organic compound, said exterior phase further comprising dissolved oxygen, surrounding aqueous droplets, whereby said oxygen permeates into said blood and the CO_2 in said blood permeates into said aqueous droplets, and returning said blood having increased oxygen content and decreased CO_2 content to said human body.

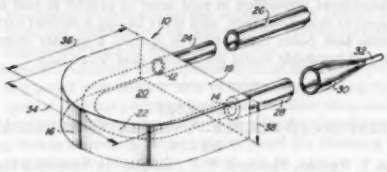
3,942,528

NON-KINKING INTRAVENOUS TUBE LOOP DEVICE

Edward A. Loeser, 8646 Oak Valley Drive, Sandy, Utah 84070

Filed July 18, 1974, Ser. No. 489,478
Int. Cl.² A61M 5/00
U.S. Cl. 128—214 R 13 Claims

1. An intravenous tube loop device comprising:
a. a base member having (1) a side surface and (2) a bottom surface for positioning adjacent the skin of a patient;
b. a first port formed in said side surface;
c. first connector means to removably connect intravenous fluid supply tubing to said first port;
d. a second port formed in said side surface;
e. second connector means to removably connect said second port to an intravenous catheter apparatus; and



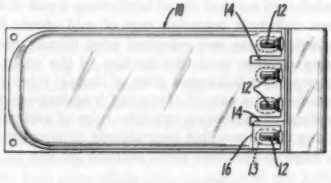
f. channel means to interconnect said first port and said second port which permits the flow of fluids therebetween and which changes the direction of the flow of said fluids with respect to the direction of the flow of said fluids at said first port.

3,942,529

PACKAGE AND METHOD FOR STORING BLOOD

Bard Meier Waage, Rosenlund, Sweden, assignor to Investrop A.G., Zug, Switzerland

Continuation of Ser. No. 95,197, Dec. 4, 1970, abandoned, which is a continuation of Ser. No. 695,852, Jan. 5, 1968, abandoned. This application May 25, 1973, Ser. No. 358,602
Claims priority, application Sweden, Feb. 1, 1967, 1459/67
Int. Cl.² A61J 01/06
U.S. Cl. 128—272 6 Claims



1. A sealed package containing a stored suspension of cellular components of blood, said package comprising nonrigid laminate wall portions resistant to a temperature of approximately that of liquid nitrogen, said walls being formed of a plastic laminate and defining an inner cavity containing said suspension, with at least one sealed opening to the inner cavity, the laminate including an inner layer next to the cavity and the suspension therein formed of a heat sealable, fluorinated ethylenepropylene polymer and further including an outer layer formed of a nonthermoplastic polyimide which as a melting temperature substantially higher than that of the inner layer so as to withstand heat-sealing temperatures applied directly thereto which actuate and thereby heat-seal said inner layer.

3,942,530

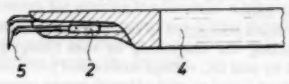
PROSTATE RESECTOSCOPE HAVING ULTRASONIC SCANNING

Allan Northeved, Bagsvaerd, Denmark, assignor to Akademiet for de Tekniske Videnskaber, Svejsecentralen, Glostrup, Denmark

Filed Sept. 4, 1974, Ser. No. 503,191
Claims priority, application Denmark, Sept. 3, 1973, 4839/73
Int. Cl.² A61B 17/32
U.S. Cl. 128—303.15 1 Claim

1. A prostate resectoscope comprising a first elongated hollow cystoscope tube having a proximal and a distal end, a pair of fixedly mounted electrically insulated conductors sur-

rounded by said first tube and protruding from said distal end of said cystoscope tube, said protruding conductors being stripped and joined together to provide a cautery electrode, a second elongated tube of a material inert to body tissues and fluids, said second tube being surrounded by said first tube and having a proximal and a distal end, said distal end of said second tube protruding from said distal end of said cystoscope tube, a stepping motor having an output shaft secured to the proximal end of said second tube to rotate said second tube



within said first tube, energizing means to supply energy to said stepping motor, and ultrasonic transducer means fixedly mounted on the distal end of said second tube and having electrical connectors passing through said second tube to transmit a beam of sound energy and to receive reflected sound energy from tissue interfaces in the prostate region to obtain, as the second tube is rotated within said first tube, an ultrasonic scanning picture in B-representation of a section of the prostate region to indicate where to make a resection in said section of the prostate region.

3,942,531

APPARATUS FOR BREAKING-UP, WITHOUT CONTACT, CONCREMENTS PRESENT IN THE BODY OF A LIVING BEING

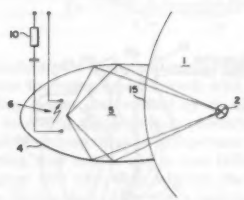
Günter Hoff, Meersburg, and Armin Behrendt, Friedrichshafen, both of Germany, assignors to Dornier System GmbH, Germany

Filed Sept. 11, 1974, Ser. No. 505,093

Claims priority, application Germany, Oct. 12, 1973, 2351247

Int. Cl.² A61B 17/00; A61N 3/00

U.S. Cl. 128—328 **3 Claims**



1. An apparatus for breaking-up, without contact, a concrement present in the body of a living being, which comprises waveguide means having a circular cross-section and elliptical walls in longitudinal cross-section,

diaphragm means on an end face of said waveguide means and adapted to be placed against said body,

liquid means filling said waveguide means,

and spark discharge means in said waveguide means and located at one focus of the ellipse formed by said elliptical walls,

whereby shock waves generated by said spark discharge means are reflected and focused by the walls of said waveguide means, pass through said liquid, said diaphragm means, and tissue of said body, and are adapted to impinge upon and break-up a concrement located at the other focal point of the ellipse formed by said elliptical walls.

3,942,532

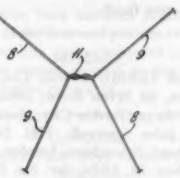
BRAIDED SUTURE

Alastair Wilson Hunter, and Darrell R. Thompson, both of Somerville, N.J., assignors to Ethicon, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 303,588, Nov. 3, 1972, abandoned. This application Aug. 15, 1974, Ser. No. 497,596

Int. Cl.² A61L 17/00

U.S. Cl. 128—335.5 **16 Claims**



1. A suture having improved tie-down performance comprising a multifilament, the outer surface of the multiflament being coated with from about 0.4 percent to about 7 percent based on suture weight of an aliphatic polyester that is a solid at room temperature; said polyester having from 2 carbon atoms to about 12 carbon atoms between the ester linkages in the polymer chain and said polyester having a molecular weight in the range of 1,000 to 15,000.

3,942,533

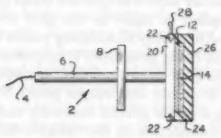
CARDIAC DEFIBRILLATOR DEPOLARIZING PADDLE ARRANGEMENT

Robert L. Cannon, III, 17 Lakeview Terrace, Waltham, Mass. 02154

Filed Oct. 17, 1974, Ser. No. 515,727

Int. Cl.² A61N 1/18

U.S. Cl. 128—417 **1 Claim**



1. At least one cardiac defibrillator electrode paddle conductive paste storage system comprising:

an insulating handle suitable for grasping;

an end flange connected to said handle at one end thereof, said end flange being configured with peripheral key means,

an electrode face mounted on a side of said end flange opposite to said handle, said face covering a substantial portion of said side;

a resilient and reusable cover member peripaerally configured with the complement of said key means to permit tight-fit removable mounting of said cover member to said end flange, said cover member being removably connected with said end flange and together defining a sealed space between said electrode face and the inside surface of said cover member;

conductive fluid stored in said sealed space whereby the orientation of said at least one paddle is not critical to the storage of said conductive fluid and whereby the distance between said stored conductive fluid of one of said at least one paddle and said stored conductive fluid of an-

other of said at least one paddle is not necessarily a fixed distance;

another flange connected to said handle at a predetermined distance from said end flange to limit travel of said handle grasping towards said end flange;

means for electrically connecting said electrode face to a power source and for electrically insulating said handle and said another flange from said electrode face;

and tab means protruding from said cover member for facilitating removal of said cover member and exposure of said conductive fluid.

3,942,534

DEVICE FOR TERMINATING TACHYCARDIA

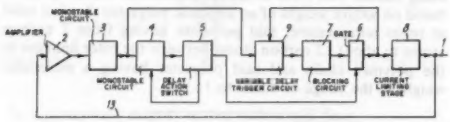
Kenneth Roy Allen, 48 Wren Road; John Kenny, 4 Hobb's Way, both of Welwyn Garden City, Hertfordshire, and Roworth Adrian John Spurrell, Flat 24, Delphian Port, Leigham Port Road, Streatham, London, all of England

Filed Nov. 21, 1974, Ser. No. 525,984

Claims priority, application United Kingdom, Nov. 21, 1973, 54110/73

Int. Cl.² A61N 1/36

U.S. Cl. 128—419 PG **12 Claims**



1. A device for terminating tachycardia comprising input means responsive to heartbeat signals; a tachycardia rate detector connected to the input means and effective to give an output while heartbeat signals occur at a rate characteristic of tachycardia; a gate circuit connected to be controlled by the output from the tachycardia rate detector; a variable delay pulse circuit connected to receive as input pulses heartbeat signals from the input means and give output pulses each a predetermined delay after a respective input pulse, the output pulses being applied as input to the gate circuit; an output circuit connected to supply stimulating pulses to the heart, the stimulating pulses being generated in response to gated pulses received from the gate circuit; a blocking circuit connected to the gate circuit to ensure that output pulses from the gate are inhibited during a pause period following each output pulse; and a feedback connection to the variable delay pulse circuit for applying thereto feedback signals which alter the said predetermined delay from one output pulse to the next.

3,942,535

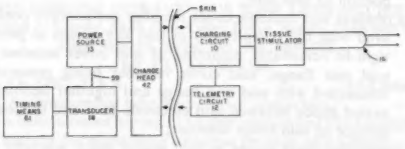
RECHARGEABLE TISSUE STIMULATING SYSTEM

Joseph H. Schulman, Los Angeles, Calif., assignor to G. D. Searle & Co., Skokie, Ill.

Continuation of Ser. No. 401,406, Sept. 27, 1973, abandoned. This application July 26, 1974, Ser. No. 491,974

Int. Cl.² A61N 1/36

U.S. Cl. 128—419 PS **11 Claims**



1. A rechargeable tissue stimulating system comprising:

means for implantation in the body of a living subject for applying electrical pulses to stimulate living tissue in order to maintain bodily functions of said subject, said means including a rechargeable DC voltage source supplying the power for said pulses;

internal charging means for implantation beneath the skin of said subject and connected to said source for providing a charging current to said voltage source, said internal charging means including a first induction coil;

an external means for supplying power by induction to said internal charging means and including a second induction coil for setting up a magnetic field and for positioning external to a living subject and proximate to said first induction coil;

telemetry means connected to said internal charging means for detecting the magnitude of said charging current received by said DC voltage source and providing a magnetic output signal to said external power source indicative of the magnitude of said charging current; and

transducer means forming a part of said external means for supplying power for converting said magnetic output signal to an electrical signal, and including current control means responsive to said electrical signal for adjusting the strength of the magnetic field applied to said internal charging means in response to changes in said electrical signal, such that the magnitude of said charging current is maintained within predetermined limits.

3,942,536

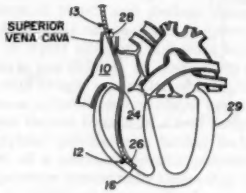
CARDIOVERTING DEVICE HAVING SINGLE INTRAVASCULAR CATHETER ELECTRODE SYSTEM AND METHOD FOR ITS USE

Mieczyslaw Mirowski, Owings Mills; Morton M. Mower, Baltimore, both of Md., and Rollin H. Denniston, III, Anoka, Minn., assignors to Mieczyslaw Mirowski, Owings Mills, Md.

Continuation-in-part of Ser. No. 124,326, March 15, 1971, abandoned. This application Sept. 19, 1973, Ser. No. 398,793

Int. Cl.² A61N 1/36

U.S. Cl. 128—419 D **42 Claims**



1. A method for cardioverting a malfunctioning heart with a single intravascular catheter carrying first and second spaced electrodes for delivering to the heart electrical energy to cardiovert the same, the method comprising the steps of: positioning the single intravascular catheter into association with the heart with said first electrode located within the heart chamber to be cardioverted and said second electrode located outside said heart chamber; sensing heart activityl; and delivering cardioverting electrical energy to the heart across said first and second electrodes when a manfunction susceptible to conversion by electrical shock is sensed.

3,942,537

NOVEL FLAVORING COMPOSITIONS AND PROCESSES

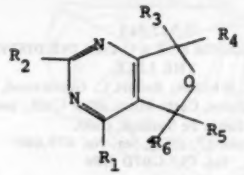
William J. Evers, Atlantic Highlands, and Joseph Sleczkowski, Matawan, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 325,674, Jan. 12, 1973, Pat. No. 3,857,972, which is a division of Ser. No. 123,024, March 10, 1971, abandoned. This application May 28, 1974, Ser. No. 473,370

Int. Cl.² A24B *3/14, 13/00, 15/00, 15/08*

U.S. Cl. 131—17 R 8 Claims

1. A process for altering the flavor of a tobacco or tobacco substitute product which comprises adding thereto from about 0.01 to 100 parts per million by weight of at least one oxycyclic pyrimidine having the formula



wherein R_1 is alkyl or hydrogen; R_2, R_3, R_4, R_5 and R_6 are the same or different and are hydrogen or alkyl.

3,942,538

ELECTRICAL BACK-COMBING DEVICE

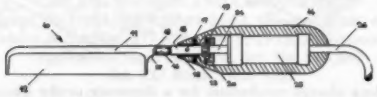
René Deppeler, 38, rue du Stank, 1200 Geneva, Switzerland

Filed Mar. 27, 1972, Ser. No. 238,105

Claims priority, application Switzerland, Mar. 29, 1971, 4578/71

Int. Cl.² A45D *24/00*

U.S. Cl. 132—11 R 5 Claims



1. An electrically driven back-combing device comprising a comb and means for swinging said comb with respect to a housing including a cam disc rotated by an electric motor located in said housing, a swinging lever pivotally mounted in said housing and projecting through the aperture in said housing for supporting said comb, and a cam following means adapted to engage said cam disc, wherein the cam disc is mounted on the driving shaft of the motor, said cam disc being provided with a central aperture including an interior surface having symetrically disposed recesses and projections adapted to contact said following means, and wherein the cam following means is a ball-bearing mounted on that extremity of the swinging lever which is situated inside the housing.

3,942,539

ANTISEPTIC CLEANSING DENTAL FLOSS

Joseph J. Corliss, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Apr. 8, 1974, Ser. No. 458,908

Int. Cl.² A45D *40/00*

U.S. Cl. 132—79 E 4 Claims

1. An antiseptic dental floss comprising a flexible length of floss having a first portion of thin, smooth, homogeneous conventional floss and a second portion of non-homogeneous compressible material of generally larger diameter than the first portion, wherein said material includes dental floss combined with fluid antiseptic wherein the floss has means for retaining the antiseptic discharging said antiseptic responsive to external pressure created by drawing the second portion through ones teeth, wherein the said means comprises rough-

ened flexible enterior floss surfaces protruding radially beyond the diameter of the first said portion creating recesses for the deposition, retention and subsequent oozing discharge of antiseptic from the second portion to the teeth surfaces responsive to compressive pressures.

3,942,540

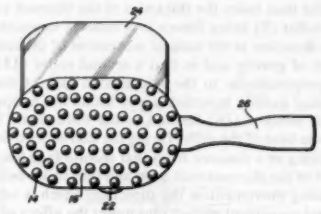
HAIRBRUSH WITH RETRACTABLE HANDLE AND MIRROR

Lawrence J. Gause, 2019 Lacey St., Bakersfield, Calif. 93304

Filed Oct. 3, 1974, Ser. No. 511,700

Int. Cl.² A45D *44/18*

U.S. Cl. 132—85 6 Claims



1. A hair grooming device, comprising a supporting body having at least one external mounting face, hair engaging elements projecting from said face of the body, grip means connected to the body, a reflector element, means movably and non-detachably mounting the reflector element in the body for displacement between positions retracted within the body and extended therefrom, and selectively actuated means for displacing the reflector element to the extended position, said grip means including a handle element, means movably mounting the handle element in the body for displacement between positions retracted within the body and extended therefrom, and means for displacing the handle element to the extended position simultaneously with the reflector element.

3,942,541

DEVICE ENABLING THE CONVEYING, ONE BY ONE, OF COINS INSERTED IN BULK IN A RECEPTACLE

Marcel Dupuy, Issey-les-Moulineaux, France, assignor to Compagnie Generale d'Automatisme, France

Filed Sept. 18, 1974, Ser. No. 507,205

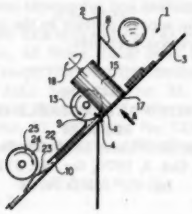
Claims priority, application France, Sept. 18, 1973, 73.33430

Int. Cl.² G07D *9/00*

U.S. Cl. 133—1 R 4 Claims

1. Device enabling the conveying, one by one, of the coins deposited in bulk in a basket, characterized in that at least the lower portion of the said basket is a hopper substantially in the form of a truncated pyramid tapering towards the top and comprising a first substantially vertical face (2) a second oblique face (3) forming, with the first face, a first dihedral (4) having a horizonal ridge and a value less than 90°, a third face (5) and a fourth face (6) which are lateral, constituting a second dihedral (7) having a ridge substantially perpendicular to the said first face, in that the bottom of the said hopper extends by a passage (10) having parallel lateral edges extend-

ing the said third and fourth faces from the place where the width of the bottom of the hopper is greater than the largest diameter of the parts used but less than twice the diameter of the smallest coins used, the bottom of that passage being constituted by the extension of the said second face of the hopper, in that a first roller (9) having an axis parallel to the ridge of the said first dihedral is placed at least partly inside the hopper at the place where the connection is made between the latter and the said passage and in such a way that its nearest generatrix to the second face be distant from the latter by a value greater than the thickness of the thickest coin used



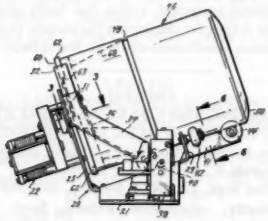
but smaller than twice the thickness of the thinnest coin used, the said roller (9) being driven in a rotating movement in the opposite direction to the natural movement of the coins under the effect of gravity and in that a second roller (15), having an axis perpendicular to the said second face of the hopper and situated outside it, enters partly inside the hooper due to a through window (16) formed in the third face (5) of the hopper, the base of the roller facing the said second face of the hopper being at a distance from that second face less than the thickness of the thinnest coin used and that roller being driven in a rotating movement in the direction which is opposite to the natural movement of the coins under the effect of gravity.

3,942,542

COIN-HANDLING DEVICE

Gustav F. Erickson, Hot Springs, Ark., assignor to UMC Industries, Inc., New York, N.Y.

Filed May 13, 1974, Ser. No. 469,108
Int. Cl.² G07D 9/00
U.S. Cl. 133—1 R **27 Claims**



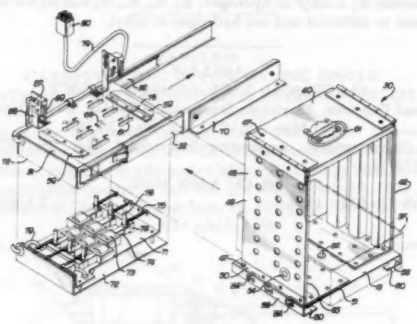
1. A coin-handling device which comprises a support, a coin-receiving drum that can be selectively moved into and out of a predetermined coin-releasing position adjacent said support and that can hold a plurality of coins in predetermined spaced-apart locations, a closure member which is carried by said coin-receiving drum and which moves with said coin-receiving drum as said coin-receiving drum is moved into and out of said predetermined coin-releasing position adjacent said support, said closure member being secured to but being movable relative to said coin-receiving drum, an exit for coins, said closure member permitting coins which are held in said predetermined spaced apart locations by said coin-receiving drum to move from said coin-receiving drum to and through said exit whenever said coin-receiving drum is in said coin-releasing position and said closure member is in a predetermined stationary position and relative movement is provided between said coin-receiving drum and said closure member, interacting surfaces on said support and on said closure member which hold said closure member in said predetermined stationary position whenever said coin-receiving drum is in said predetermined coin-releasing position adjacent said support, and means to provide relative movement between said coin-receiving drum and said closure member while said closure member is held against movement relative to said support to permit said coins which are held in said predetermined spaced apart locations by said coin-receiving drum to move to and through said exit and thereby be freed from said coin-receiving drum.

3,942,543

CHANGE MECHANISM FOR A GASOLINE DISPENSE OR THE LIKE

Lee Tyler Crowell, Whittier; Robert C. Greenwood, Cypress, and Thomas E. Jones, Costa Mesa, all of Calif., assignors to Pan Nova, Inc., Santa Fe Springs, Calif.

Filed June 17, 1974, Ser. No. 479,660
Int. Cl.² G07D 1/06
U.S. Cl. 133—2 **8 Claims**



1. In a change mechanism for a dispenser or the like, the combination of:

a housing having first and second opposite faces with a coin receiving opening and a coin return opening at each face;

first and second coin acceptance mechanisms mounted in said housing for receiving coins through said first and second face coin receiving openings, respectively;

a deck slideably mounted in said housing for movement into and out of said housing;

a coin cartridge removably mounted on said deck and having spaced first and second sets of coin carriers,

said deck including means for moving coins from said first and second sets of carriers into said first and second face coin return openings, respectively; and

a coin tray carried in said coin cartridge between said sets of coin carriers for receiving coins from said coin acceptance mechanisms.

3,942,544

HOPPER PAYOUT FOR VARIOUS COIN DENOMINATIONS

Charles T. Breitenstein, Elk Grove Village, and Frank G. Nicolaus, Chicago, both of Ill., assignors to Spiral Step Tool Company, Elk Grove Village, Ill.

Filed Aug. 1, 1973, Ser. No. 384,624
Int. Cl.² G07D 3/14, 9/00
U.S. Cl. 133—4 R **35 Claims**

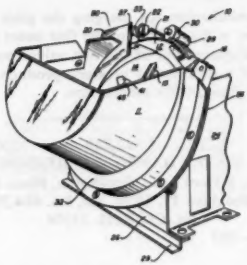
1. A hopper payout for various coin denominations comprising, in combination

a hopper having a peripheral gutter on to which coins are gravitationally urged,

a pin wheel rotatably mounted at one end of said hopper in coin collecting relationship with the gutter,

a removable and replaceable shelf wheel mounted atop the pin wheel, and at a preselected diametrical relationship to the diameter of the pin wheel depending on the size of coin adapted for,

a plurality of radially spaced pins on the pin wheel between the periphery of the shelf wheel and the periphery of the pin wheel,



a pivotally adjustable knife having a point portion positioned to pick up coins adjacent the periphery of the shelf wheel,

chute means in coin delivery communication with the knife point and downstream therefrom,

drive means engaging the pin wheel to deliver coins from a lower portion of the gutter beyond the upper portion of the hopper in accordance with a preselected start and stop signal.

3,942,545

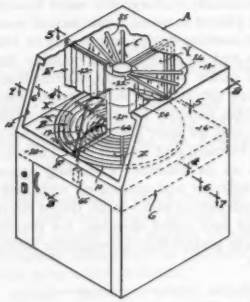
GLASS WASHER AND CONDITIONER

Edward W. Flynn, 4051 South M-52, Owosso, Mich. 48867

Division of Ser. No. 377,579, July 9, 1973, abandoned. This application Sept. 10, 1974, Ser. No. 504,692

Int. Cl.² B08B *3/02, 9/08*

U.S. Cl. 134—56 **18 Claims**



1. Apparatus for automatically washing glassware on demand and including; a housing defining a chamber with a frontal opening, a turn table journaled on a vertical axis and disposed to advancively support glassware on a horizontally disposed plane within the confines of said chamber, normally operable drive means advancively rotating the turn table, a spray curtain of flexible material penetrable by said glassware advanced therethrough upon the turn table and recessed toward said axis dividing the chamber into a rearmost wash tunnel and foremost loading and delivery stations accessible through said frontal opening and contiguous to opposite entry and exit portions of the spray curtain respectively, separator command means dividing said frontal opening into said loading and delivery stations and responsive to glassware advanced thereto and to stop the said drive means, and wash means processing the glassware loaded upon the turn table at the foremost station and advanced thereby through the rearmost wash tunnel, removal of said advanced glassware from the separator command means permitting normal operation of the drive means to advance the turn table.

3,942,546

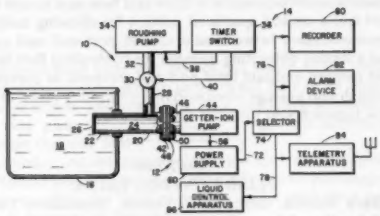
CORROSION MONITORING AND COMPOSITION-ANALYTICAL APPARATUS

Frederick J. Radd, and Donald H. Oertle, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Division of Ser. No. 301,391, Oct. 27, 1972, which is a continuation of Ser. Nos. 88,112, Nov. 9, 1970, Ser. No. 858,243, Sept. 15, 1969, and Ser. No. 670,317, Sept. 25, 1967, abandoned. This application Sept. 11, 1973, Ser. No. 396,170

Int. Cl.² G05D *11/13;* **G01N** *31/04*

U.S. Cl. 137—93 **5 Claims**

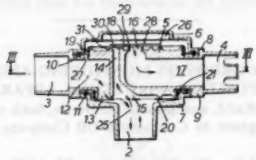


1. An apparatus for continuous instantaneous monitoring of a selected component in a fluid system comprising gas, liquid, gas and liquid, liquid and solid, or a mixture thereof; said apparatus comprising a probe means connected to a pumping means; said probe means being removeably insertable into said fluid system and having a body portion and a diaphragm portion which will allow diffusion of said selected component defining a closed cavity which is evacuated and which connects to and communicates with said pumping means; said pumping means having an electrical molecule pumping means and a current indicating means which electronically removes molecules from said cavity, maintains evacuation of said cavity and indicates the molecule pumping rate as electrical current; said electrical molecule pumping means having at least two electrodes in a magnetic field with an electrical potential between said electrodes with one electrode being an anode and one electrode being a cathode so that molecules in said cavity pass into said magnetic field, are accelerated into an electrode and indicated as an electrical current; said probe having a geometry and size so that the probe can be sealably installed through a port in a vessel wall with the diaphragm portion of said probe exposed to said fluid system with the diaphragm portion of said probe being of such size, material, and configuration to allow selective diffusion of said selected component at a controlled rate; said current being transmitted to a receiving means as a signal and being indicated, recorded, or a combination thereof as a current magnitude; said signal being transmitted to a controlling means with an injector means which injects a composition into said fluid system to effect the selected component being monitored.

3,942,547
VALVES

John Pfitzner, 87 Morton Way, London N. 14, England

Filed Aug. 13, 1974, Ser. No. 496,991
Claims priority, application United Kingdom, Aug. 22, 1973, 39864/73
Int. Cl.² G05D 7/00
U.S. Cl. 137—102 12 Claims

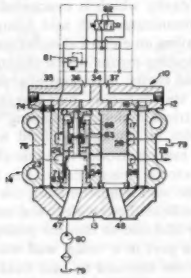


1. A valve for directing flow of breath to and from a patient, having a first port adapted to be connected to a source of breath, a second port adapted to be connected to a patient, a third port adapted to convey exhaled breath from the valve, a passage between said second and third ports, a first obturating member for controlling flow between said first and second ports, said obturating member comprising a diaphragm secured at its periphery and having an intact outer portion ensuring unidirectional flow from said first port to said second port and a central apertured portion for allowing continuous communication between said second port and said passage, and a second obturating member for controlling flow between said passage and said third port and arranged to prevent flow through said passage when said first obturating member allows flow between said first and second ports.

3,942,548
FLUID CONTROL VALVE

Hikaru Murata, Gifu; Yasuji Umeda, Minokamo; Yasusada Sakurai, and Yasuo Doi, both of Gifu, all of Japan, assignors to Kayabakogyokabushikikaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 319,306, Dec. 29, 1972, Pat. No. 3,884,253. This application Nov. 25, 1974, Ser. No. 526,696
Claims priority, application Japan, Nov. 26, 1973, 48-132937
Int. Cl.² G05D 7/01
U.S. Cl. 137—110 4 Claims

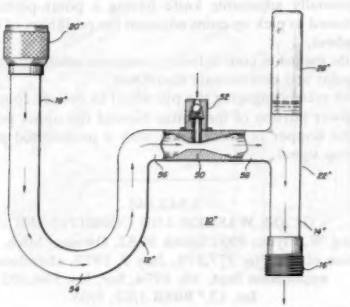


1. A fluid control valve consisting of the following:
a valve body having a cylindrical valve chamber;
port mechanisms utilizing a first outer port, and second and third outer ports all connected to the valve chamber, where the first and the second ports form a supply side main flow passage passing the valve chamber at its end, while the first and the third ports form a discharge side main flow passage passing the valve chamber at its end;
a valve spool held in the said valve chamber and consisting of a first valve spool and a second valve spool, where the first valve spool slides inside the valve chamber between positions to complete or cut the main flow passage on the discharge side, while the second valve spool under the supply pressure, can open the main flow passage on the supply side;
passages to form a pilot flow passage bypassing the valve chamber;
a limit orifice mechanism installed in the pilot flow passage; and
a passage mechanism for merging the pilot flow and the main flow in the vicinity of the first outer port and controlling displacement of the first valve spool as well, by means of a differential pressure produced in the flow passing a limit orifice mechanism.

3,942,549
WATER HAMMER ARRESTOR

Morris Tobin, 2 Tami Lane, Burlington, Mass. 01803

Filed June 17, 1974, Ser. No. 464,797
Int. Cl.² F16L 55/04
U.S. Cl. 137—207 5 Claims



1. An automatically rechargeable water hammer suppressor adapted to be placed between a pressurized water supply line and a water consuming device comprising an inlet portion, an outlet portion and an intermediate member interconnecting said inlet and outlet portion; said intermediate member including a venturi throat, an air inlet passage extending through said intermediate member to said venturi throat, and an air inlet valve in said air inlet passage for drawing air into the water flowing through said venturi throat in said intermediate member; and an air chamber extending upward from said intermediate member and connected with said intermediate member downstream of said venturi throat between said venturi throat and said outlet member, for receiving air at increased pressure greater than atmospheric introduced by said venturi throat.

3,942,550
DUAL-ACTING RELIEF VALVE

Myrl E. Orme, Canoga Park, Calif., assignor to The Bendix Corporation, North Hollywood, Calif.

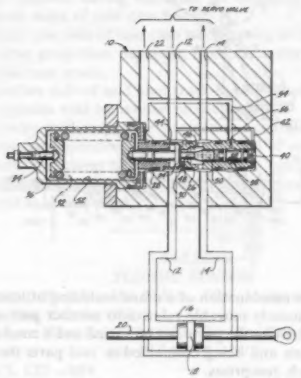
Filed Aug. 2, 1974, Ser. No. 494,160
Int. Cl.² F16K 17/18
U.S. Cl. 137—493 14 Claims

1. A dual-acting relief valve comprising
a housing,
first and second fluid conduits in said housing,
a chamber in said housing intersecting said conduits,

a sleeve in said chamber having a hollow interior and ports communicating said fluid conduits with said interior and including a valve seat,

a spool valve member and an isolation piston in said sleeve with a poppet carried on said spool valve and a second chamber between said valve member and said piston,

resilient means urging said spool valve in a direction such that said poppet is held against said seat, thus blocking communication between said first and second fluid conduits,



means communicating the fluid pressure in said first fluid conduit to the end of said isolation piston opposite said resilient means such that said pressure acting on said piston through said spool valve member tends to move said poppet off said seat, and

means communicating the fluid pressure in said second fluid conduit to said second chamber such that said pressure acting on said spool valve member tends to move said poppet off said seat, whereby upon the occurrence of pressures in either said first and second fluid conduits greater than desired, said poppet is moved off said seat to vent the higher of the pressures in said fluid conduits to the lower.

3,942,551

HYDRAULIC DAMPING MEANS FOR HINGED CHECK VALVE

Ronald A. Schuller, and Al D. Hogan, both of Tulsa, Okla., assignors to Wheatley Company, Tulsa, Okla.

Filed Mar. 6, 1975, Ser. No. 556,191

Int. Cl.[2] F16K *21/10*

U.S. Cl. 137—514 **11 Claims**

1. A hydraulically controlled check valve for use in a high pressure pipeline, said check valve having a hinged clapper and a seat sealable against said clapper to prevent reverse flow, the improvement comprising an hydraulic control portion of the check valve which includes:

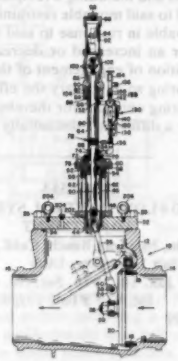
a hydraulic cylinder having a piston slidably contained therein, said hydraulic cylinder being filled with a hydraulic fluid;

piston rod slidably and sealably received in said hydraulic cylinder and extending through both ends thereof, said piston being connected to said piston rod in said hydraulic cylinder;

crosshead means for connecting the first end of said piston rod to a clapper connecting rod, movement of said clapper connecting rod, said crosshead means, said piston rod and said piston being controlled by movement of the clapper to which the clapper connecting rod is attached, pressure on the first end of said piston rod being equal to pressure in the check valve;

chamber means connected to said hydraulic cylinder for receiving a second end of said piston rod, said chamber means communicating and receiving pressure through a first valve means from the check valve;

valve passageway means providing communication between the opposite sides of the piston for controlling the flow of



hydraulic fluid from one side of the piston to the other and allowing substantially unrestricted flow in an opposite direction, said controlled flow restricting movement of said piston and said clapper to prevent slamming against the seat; and

accumulator means communicating with said hydraulic cylinder, said accumulator being of a small precharged type to allow for fluid expansion and contraction and small amounts of fluid leakage.

3,942,552

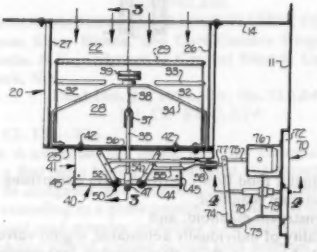
WIDE RANGE ADJUSTABLE AIR VOLUME REGULATOR

Hillard Glenn Logsdon, Charlotte, N.C., assignor to Aeronca, Inc., Pineville, N.C.

Filed Feb. 1, 1974, Ser. No. 438,625

Int. Cl.[2] F16K *15/14*

U.S. Cl. 137—517 **13 Claims**



4. An air volume regulator comprising a housing defining a passageway for the flow of air therethrough, valve means mounted for movement in said housing for adjustably restricting the air flow therethrough, linkage means cooperating with said valve means for controlling movement thereof, a leaf spring operatively connected to said linkage means for exerting an opening bias on the valve means in opposition to a

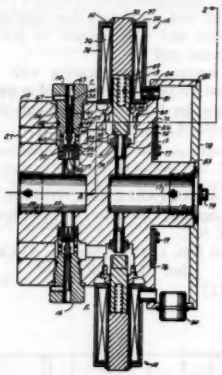
closing bias imparted on the valve means by the pressure of the air in the housing, said valve means being thereby adapted to maintain the air flow through the housing at a predetermined substantially constant rate regardless of variations in pressure of the air being supplied to the regulator, movable restraining means engaging said leaf spring along the length thereof in adjustable spaced relation to the interconnection of said linkage means therewith, sensing means for determining the requirement for an increased or decreased flow of air through the regulator, and motive means cooperating with said sensing means and including a reciprocable plunger operatively connected to said movable restraining means and being reciprocably movable in response to said sensing means sensing a demand for an increased or decreased flow of air for changing the position of engagement of the restraining means along said leaf spring so as to vary the effective length of the spring and the spring constant for thereby adjusting the regulator to maintain a different substantially constant flow rate.

3,942,553

DIGITAL FLUID FLOW CONTROL SYSTEM WITH TRIM ADJUSTMENT

Robert A. Gallatin, Newport Beach, Calif., assignor to Process Systems, Inc., Salt Lake City, Utah

Filed Jan. 10, 1974, Ser. No. 432,152
Int. Cl.² F16K 11/24
U.S. Cl. 137—599 **19 Claims**



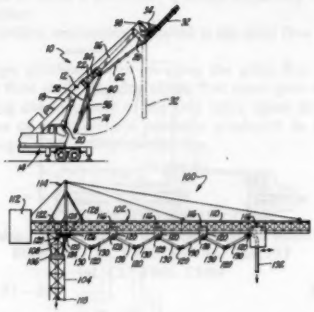
1. A digital fluid flow control system comprising:
an upstream manifold;
a downstream manifold; and
a plurality of individually actuatable, digital valve elements each having a fluid flow passage interconnecting the manifolds, a converging-diverging nozzle having an axis along the flow passage, a slug movable along the axis to disrupt the flow through the nozzle, a bistable plug, and means for positioning the plug exclusively in an open position or a closed position, the plug preventing fluid flow through the passage in the closed position and permitting fluid flow through the passage in the open position.

3,942,554

EXTENDABLE CRANE WITH FOLDING CONDUIT

Patrick S. Werner, Costa Mesa, and Frank L. Nelson, Mira Loma, both of Calif., assignors to Werner Corporation, Anaheim, Calif.

Filed Apr. 19, 1974, Ser. No. 462,317
Int. Cl.² B67D 5/02; B66C 17/00, 23/00
U.S. Cl. 137—615 **7 Claims**



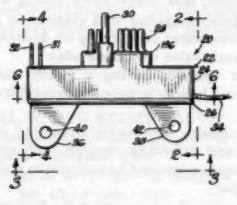
1. In the combination of a crane including at least one part which is linearly movable relative to another part so that the spacing between the parts can be varied and a conduit extending between and being connected to said parts the improvement which comprises:
said conduit consisting of a plurality of rigid sections connected to one another by rotary joints permitting said sections to be rotated with respect to one another,
one of said rotary joints being positioned at each location where said conduit is connected to one of said parts,
one of said joints being positioned between each of the rotary joints which is located where said conduit is connected to said parts,
said rotary joints all having parallel axes of rotation permitting said rigid sections to be rotated about said parallel axes,
said rigid sections being dimensioned so that during the operation of said crane said sections between said rotary joints located where said conduit is connected to said crane cannot be rotated to an aligned position.

3,942,555

ELECTRICAL SWITCH AND FLUID CONTROL DEVICE

Andrew F. Raab, Morton Grove, and Jesse M. Cobb, Glenview, both of Ill., assignors to Indak Manufacturing Corporation, Northbrook, Ill.

Filed Mar. 25, 1974, Ser. No. 454,320
Int. Cl.² F16K 11/06
U.S. Cl. 137—625.2 **12 Claims**



1. A fluid control device,
comprising a casing,
a control member movable in said casing in opposite directions along a predetermined path,

fluid control means in said casing and having a valve member movable in said casing in opposite directions transverse to said path of said control member,

and camming means operable between said control member and said valve member for moving said valve member transversely to said path in response to movement of said control member along said path,

said camming means including a cam track and a follower for engaging and following said track,

said cam track having a transverse throw relative to said path,

said cam track having two opposite sides,

said follower having elements for engaging and following both sides of said cam track,

at least one side of said cam track having at least one transverse projection deviating from the transverse throw of said cam track,

the other side of said cam track having a hollow formation opposite said transverse projection,

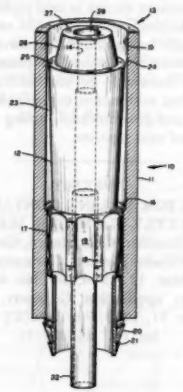
whereby said transverse projection accurately determines the corresponding operating position of said follower for both directions of movement of said control member so as to avoid inaccuracies due to play between said follower and said cam track.

3,942,556

FLUIDIC SENSOR

Richard J. Wojcikowski, Toledo, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed Sept. 30, 1974, Ser. No. 510,813
Int. Cl.² G01B *13/12*
U.S. Cl. 137—804 **8 Claims**



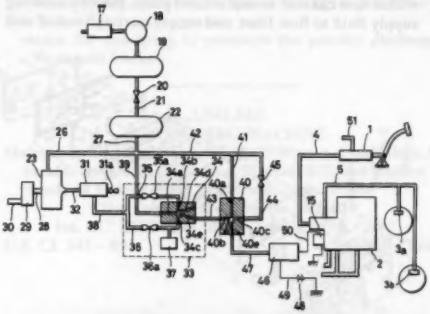
1. A fluidic sensor comprising an outer tube defining a generally cylindrical bore therethrough and an inner tube defining a bore therethrough said tubes being generally coaxial and spaced to form an annular air supply passageway therebetween, said inner tube including an annular end portion generally normal to the axis of said tube and axially aligned with an end of said outer tube, an annular step axially spaced from said end portion and generally parallel thereto and a frustroconical wall extending from said end portion to said step and increasing in diameter in the direction of said step and means for connection of air supply for communication with said annular space and for connection of an air signal line in communication with said bore in said inner tube.

3,942,557

VEHICLE SPEED DETECTING SENSOR FOR ANTI-LOCK BRAKE CONTROL SYSTEM

Kiichi Tsuchiya, Tokyo, Japan, assignor to Isuzu Motors Limited, Japan

Filed May 31, 1974, Ser. No. 475,184
Claims priority, application Japan, June 6, 1973, 48-63516
Int. Cl.² B60T *8/06*; F15C *1/16*
U.S. Cl. 137—810 **4 Claims**



1. A vehicle speed detecting sensor, for an anti-lock hydraulic brake control system including a master cylinder, wheel brake cylinders and hydraulic lines interconnecting the master cylinder and the wheel brake cylinders, said sensor comprising, in combination, a casing defining a cylindrical vortex chamber having a circumferential wall interconnecting axially spaced end walls; a rotor rotatably mounted in said vortex chamber on one end wall of said casing and having a cylindrical peripheral wall facing and spaced radially from said circumferential wall; a transmission connecting said rotor to the driving system of the vehicle for rotation at an angular velocity proportional to the vehicle speed; a pressure fluid inlet opening tangentially of said vortex chamber through said circumferential wall and in the direction of rotation of said rotor; a pressure fluid outlet opening axially of said vortex chamber through the other end wall of said casing; exhaust port means opening through said circumferential wall; a source of fluid under pressure connected to said pressure fluid inlet; and an operational circuit, including fluid elements, connected to said pressure fluid outlet and in flow-controlling relation with said hydraulic lines interconnecting said master cylinder to said wheel brake cylinders; whereby the fluid pressure at said pressure fluid outlet is proportional to the angular velocity of said rotor and thus to the vehicle speed.

3,942,558

TORSIONAL REED REFERENCE FLUIDIC OSCILLATOR

Thomas Shaw Honda, and Carl Gustave Ringwall, both of Scotia, N.Y., assignors to General Electric Company, New York, N.Y.

Filed Oct. 10, 1974, Ser. No. 513,841
Int. Cl.² F15C *3/14*
U.S. Cl. 137—826 **31 Claims**

26. A torsional reed fluidic amplifier comprising:

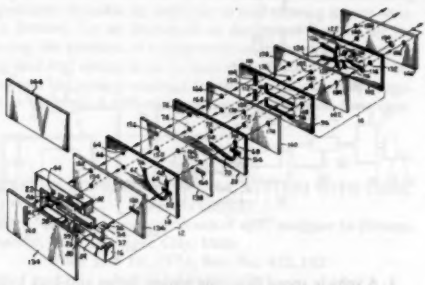
a. a first plate having an elongated slot therethrough;

b. an alongated reed member positioned within said slot and extending in a plane parallel to a plane of said first plate, said reed member including a rib extending parallel to a major axis of a plane of said reed member for imparting rigidity to said reed member;

c. first and second torsional members positioned within said slot and having a major axis extending perpendicular to the major axis of said reed member for mechanically coupling said reed member to said first plate;

d. second and third plates each having a supply port, a channel fluidically coupled to said supply port, and an output port fluidically coupled to said channel; and

e. a tab extending from said reed member in a plane perpendicular to the major axis of said reed member and having a hole therethrough, said tab being received within said channels in said second and third plates and movable between a first and a second position upon corresponding movement of said reed member in response to the receiving of first and second fluidic input signals, whereby when said first input signal moves said reed member and said tab to said first position, said hole in said tab is aligned within said channel in said second plate, thereby allowing supply fluid to flow from said supply port and out of said



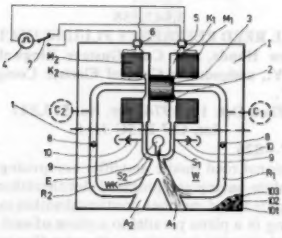
output port in said second plate, while said hole is misaligned with said channel in said third plate, thereby blocking the flow of supply fluid to said output port in said third plate, and when said second input signal moves said reed member and said tab to said second position, said hole in said tab is aligned within said channel in said third plate, thereby allowing supply fluid to flow from said supply port and out of said output port in said third plate, while said hole in said tab is misaligned with said channel in said second plate, thereby preventing supply fluid from flowing from said supply port and out of said output port in said second plate.

3,942,559

ELECTROFLUIDIC CONVERTER

Walter Kranz, Taufkirchen, and Heinz Tillmann, Ottobrunn, both of Germany, assignors to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Germany

Filed Sept. 6, 1974, Ser. No. 503,698
Claims priority, application Germany, Sept. 26, 1976, 2448308
Int. Cl.² F15C *1/08, 3/00*
U.S. Cl. 137—831 **9 Claims**



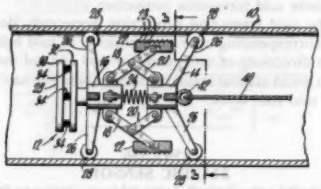
1. An electrofluidic converter, for converting electric signals into corresponding fluid signals, comprising, in combination, a pressure fluid operated, bistable fluidic element having a pressure fluid supply inlet opening into an interaction chamber, two diverging outlets extending downstream from the interaction chamber to the outside, and two control inlets opening into the interaction chamber; two feedback conduits each branched from a respective outlet and connected to the corresponding control inlet, so that a fluid oscillator is thereby constituted; a seating valve arrangement including movable valve body means engageable with valve seat means to close said feedback conduits, said valve body means being movable in an opening direction coinciding with the flow direction of the fluid through said feedback conduits; and a magnetic system actuated by electric input signals and operatively associated with said seating valve arrangement to control said valve body means to close or open said feedback conduits.

3,942,560

SAFETY STOP FOR PRESSURIZED PIPELINE

Royce D. Deaver, Houston, Tex., assignor to Exxon Research & Engineering Co., Linden, N.J.

Filed Aug. 20, 1974, Ser. No. 499,059
Int. Cl.² F16L *55/10*
U.S. Cl. 138—89 **10 Claims**



9. A method for use in offshore pressurized pipeline construction to prevent a malfunctioning sealing device from being expelled out of said pipeline due to the pressure in said pipeline, comprising the steps of:

a. pressurizing a section of said pipeline by sealing said section with a sealing device and thereafter applying pressure to said section;

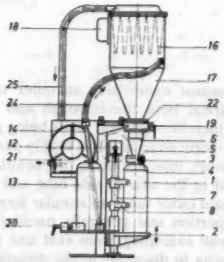
b. providing abutment means in said pipeline in front of the pressurized section and facing said sealing device, said means normally being moveable through said pipeline and being releasably secured in place in said pipeline pon impact therewith by said malfunctioning sealing device such that said means engages the inner surface of said pipeline and prevents said sealing device from being expelled out of said pipeline.

3,942,561

APPARATUS FOR FILLING CONTAINERS WITH DIFFICULTLY-FLOWABLE MATERIAL

Bernhard Arnold Stoeffler, Gaertringen, Germany, assignor to Vulcan-Werk Wilhelm Diebold, Germany

Filed Mar. 11, 1974, Ser. No. 449,714
Claims priority, application Germany, Mar. 15, 1973, 7309780[U]; Mar. 31, 1973, 7312224[U]
Int. Cl.² B65B *1/16*
U.S. Cl. 141—67 **8 Claims**



1. Apparatus for emptying and filling fire-extinguishers with difficultly-flowable fire-extinguishing powder, comprising

separator means including a filter, a transparent funnel-shaped outlet means below said filter, and a dust-proof butterfly valve for controlling flow of powder through said outlet means; means for conveying said powder from a container containing the same to said separator means, including suction means for drawing air from the atmosphere and for conveying by suction an admixture of powder and air from said supply to said separator means below said filter, said suction means including conduit means connected to the separator means above said filter for causing by suction a flow of air upwardly through said filter and thence out of said separator means to the atmosphere; a universal flange on said outlet means for connecting said outlet means to the fire-extinguisher to be filled; clamping means for securely holding the container during removal of powder therefrom; an elevator table, support means on said table for holding a fire-extinguisher thereon during filling of said fire-extinguisher, said support means having a fork-shaped receiving fixture, movable bolts on said fixture, magnetic heads on said bolts for holding a fire extinguisher in place, and set-screw means for securing said bolts, and a crank drive for lifting the table until the fire-extinguisher thereon is sealed by said universal flange; said separator means being operable to filter powder from the admixture of powder and air flowing upwardly through the filter in the separator means and to allow the separated powder to fall into said funnel-shaped outlet means; and means for cleaning said filter and separator means, including means for flowing air downwardly through said filter and means for vibrating said filter and separator means.

3,942,562

QUANTISING MACHINES

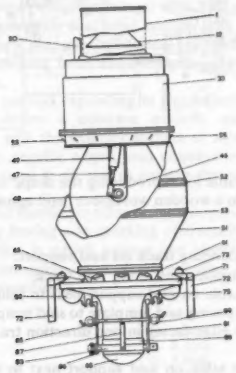
Anthony Douglas Ridgway, St. Albans; John Hugh Smith, Biggleswade, and Peter Terrick Stainforth, Knebworth, all of England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 227,800, Feb. 22, 1972. This application May 13, 1974, Ser. No. 469,677

Claims priority, application United Kingdom, Feb. 25, 1971, 5411/71; Feb. 25, 1971, 5412/71; Feb. 25, 1971, 5413/71; Feb. 25, 1971, 5414/71

Int. Cl.² B65B *1/32*

U.S. Cl. 141—83 **10 Claims**



1. A weighing machine for repeatedly delivering to receivers a predetermined charge of fine powder comprising:

a fluidizer having an outlet, in which the powder is fluidized and maintained with an approximately constant head of fluidized powder above the outlet at least at the start of each weighing cycle,

a rotatable weigh bucket mounted on weight-sensing means, said weight-sensing means generating a signal in response to weight in said weigh bucket, said weigh bucket having separate compartments arranged so that by rotation of said weigh bucket each compartment may in turn be positioned for receiving powder from said fluidizer while another compartment discharges its load,

valve means connected to said fluidizer outlet for controlling the flow of powder from said fluidizer, said valve means being operable in response to a signal generated by said weight-sensing means, and

means for delivering to receivers the powder discharged from said bucket.

3,942,563

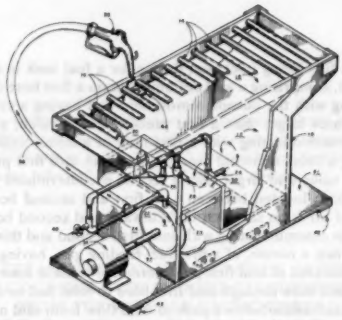
SLIP CASTING MACHINE

Malcolm E. Connors, 87 Lowell St.; William A. Guazzaloca, 61 Arcadia Ave., both of Reading, Mass. 01867, and Herbert T. Wood, 14 Upland Road, Wakefield, Mass. 01880

Filed July 5, 1974, Ser. No. 486,019

Int. Cl.² B65B *3/04;* **G01F** *11/30;* **B28B** *13/02*

U.S. Cl. 141—88 **7 Claims**



1. An improved clay slip mixing and casting apparatus for recirculation, agitation and uniform mixing of said slip in turn yielding a homogenous slip capable of regulated delivery to a mold positioned upon a integrated receiving and casting support roller bar rack, which in combination comprises:

a housing;

a principal supply tank within said housing for containing said slip;

a depressed reserve well integrated into and extending below said principal supply tank and communicating with the base of said principal supply tank and said housing;

a well outlet pipe;

a pump mounted within said housing for drawing said slip from said well through said well outlet pipe, for forcing said slip to recirculate into said supply tank, and for forcing delivery of said slip to said casting support rack;

a pump outlet pipe providing means through which said pump forces said slip recirculation to said supply tank and said slip delivery to said casting support rack;

a delivery pipe means interrupting and secured to said pump outlet pipe providing means for delivery of said slip to said casting support rack;

a valve further interrupting said pump outlet pipe, beyond said delivery pipe, for regulating and restricting the volume of slip recirculated and delivered; and

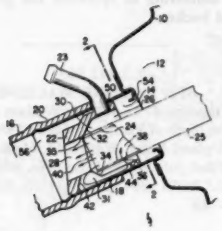
said pump outlet pipe terminating at the juncture of said supply tank and said reserve well, and facilitating, in combination with said well outlet pipe flow, self activated agitation and mixing functions of said apparatus.

3,942,564

FUEL TANK FILLING INLET PORT DEVICE

Tunoru Nakazato, Chigasaki, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan

Filed July 10, 1974, Ser. No. 487,023
Claims priority, application Japan, July 13, 1973, 48-83205
Int. Cl.² B65B 3/04
U.S. Cl. 141—348 5 Claims



1. A fuel filling inlet port device for a fuel tank in a motor vehicle, comprising a wall defining therein a first bore communicating with the outside atmosphere and having a cross sectional area larger than a first predetermined value, a second bore communicating with a fuel tank of a motor vehicle and having a cross sectional area smaller than said first predetermined value and larger than a second predetermined value, a third bore located between said first and second bores and tapered off from said first bore toward said second bore, and a recess communicating with said first, second and third bores and, when a nozzle, of a first fuel feeding gun, having a cross sectional area of said first predetermined value is inserted into said third bore through said first bore to feed fuel to said fuel tank, said recess forms a path of fluid flow from said nozzle to a hole in the side of said nozzle connected to a shut off mechanism of said fuel feeding gun, said recess having one end adjacent said second bore and the other end remoter from said fuel tank than said one end, fuel from said nozzle striking against said one end and being then diverted thereby toward said other end, said fuel diverted by said one end striking against said other end and being then diverted thereby to said hole in said nozzle.

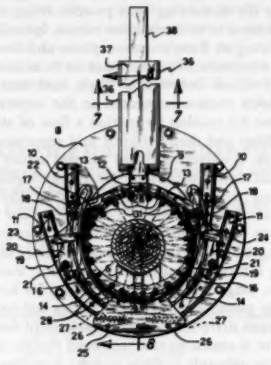
3,942,565

LOG CLEANING AND BARKING

Clément Ratelle, Ville St. Laurent, and Pierre Rouillard, Repentigny, both of Canada, assignors to Clément Ratelle, St. Laurent, Canada

Filed July 26, 1974, Ser. No. 492,160
Claims priority, application Canada, Aug. 2, 1973, 178012
Int. Cl.² B27L 1/00
U.S. Cl. 144—311 13 Claims

1. In a log cleaning and barking machine provided with a conveyor producing endwise displacement of a log in a selected direction along a path extending through the machine, the combination comprising a first series of fluid jet nozzles surrounding the log path, converging radially inward towards the latter, and positioned for impingement of bark cutting fluid jets in circumferentially spaced-apart relationship and relatively orthogonally onto the bark of said log, a second series of fluid jet nozzles surrounding the log path and spaced down the latter relative to the first series and conically converging inward towards the log path and in opposite direction relative to said selected direction, and high pressure fluid supply means connected to said fluid jet nozzles and arranged to produce high pressure jets in the latter, whereby to cut said bark into strips longitudinally of said log with said first series



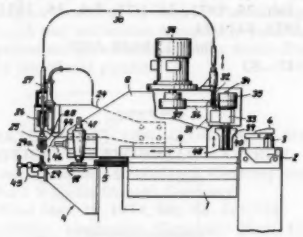
of fluid jets and to thereafter peel said bark strips from the wood of said log with said second series of fluid jets.

3,942,566

APPARATUS FOR SHAPING A WOODEN WORKPIECE ACCORDING TO A TEMPLATE CONFIGURATION

Erich Schmidt, Vienna, Austria, assignor to Maschinenfabrik Zuckermann Komm. Ges., Vienna, Austria

Division of Ser. No. 342,803, March 19, 1973, Pat. No. 3,865,162. This application Aug. 19, 1974, Ser. No. 498,370
The portion of the term of this patent subsequent to Feb. 11, 1992, has been disclaimed.
Int. Cl.² B27G 5/06
U.S. Cl. 144—144 R 2 Claims



1. An apparatus for reproducing the shape of a guide edge of a template in a wooden workpiece, said apparatus comprising:

a support;

a linearly extending track on said support;

a carriage displaceable along said track;

a template table on said support next to said track;

means for securing said template to said template table with said guide edge facing in one direction transverse to said track;

a workpiece table on said support next to said track and adjacent said template table;

means for securing the wooden workpiece to said workpiece table;

a slide on said carriage displaceable transverse to said track;

a roller on said slide engageable in the opposite direction transverse to said track with said edge of said template, said roller being rotatable about a roller axis;

means on said carriage for urging said slide in said opposite direction for forcibly biasing said roller against said edge,

said edge serving as a stop for said slide in said opposite direction;

a material-removing tool on said slide engageable with said workpiece, said tool being rotatable about an axis coplanar with said roller axis;

means on said carriage for rotating said tool on displacement of said carriage along said track for reproducing in said workpiece the shape of said edge whereby said tool exerts substantially no force upon the workpiece in said directions; and

means for securing a second template to said template table, a second roller carried on said slide and engaging the guide edge of said second template, and means positively linking said second roller to said tool for vertically displacing said tool on displacement of said second roller by said second template.

3,942,567

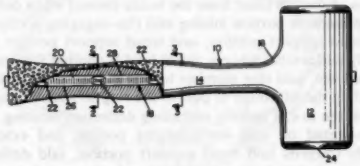
CAST ALUMINUM ALLOY HAMMER

Vincent J. Richilano, Lakewood, Ohio, assignor to Zephyr Industries, Inc., Lakewood, Ohio

Filed Aug. 14, 1974, Ser. No. 497,272

Int. Cl.² B25C *1/00*; B25D *1/00*

U.S. Cl. 145—29 R **10 Claims**



1. A one piece hammer structure comprising:

integrally cast head and handle portions merging together at a merger area, said head and handle portions each including a longitudinal axis, said axes being generally normal to each other with said merger area being generally centrally disposed on said head portion with said head portion having a generally cylindrical configuration including opposed striking faces disposed generally normal to said head axis;

said handle portion expanding in size adjacent said merger area to define a concave exterior surface merging smoothly with the exterior surface of said head without any sharp angular edges, said concave exterior surface being concave in all planes passing through said handle axis; and,

said head and handle portions being comprised of an aluminum alloy having non-sparking characteristics when the head portion is struck against any object target not including iron oxides, said aluminum alloy having the following composition:

Copper	0- 1.00%
Zinc	0- 0.10%
Iron	0- 1.80%
Silicon	0- 0.35%
Manganese	0.10- 0.35%
Magnesium	6.50- 8.50%
Beryllium	0- 0.005%
Boron	0- 0.001%
Titanium	0.10- 0.25%
Sodium	0- 0.002%
Nickel	0- 0.15%
Tin	0- 0.15%

the balance being aluminum.

3,942,568

UNILATERALLY CLOSED HOLLOW STICK OF SHIRRED SAUSAGE CASING WITH AN INNER CLOSURE FORMED FROM THE TUBULAR CASING ITSELF

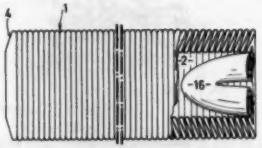
Hans Stemmler, Wiesbaden-Schierstein, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Dec. 2, 1974, Ser. No. 528,837

Claims priority, application Germany, Dec. 5, 1973, 2360481

Int. Cl.² B65D *29/00*; A22C *13/02*

U.S. Cl. 150—1 **3 Claims**



1. A one-piece, self-supporting stick of shirred tubular casing having an end closure within its bore and formed from the tubular casing itself, said end closure being composed of an angular tube roll of unshirred tubular casing.

3,942,569

UNILATERALLY CLOSED HOLLOW STICK OF SHIRRED SAUSAGE CASING WITH AN INNER CLOSURE FORMED FROM THE TUBULAR CASING ITSELF

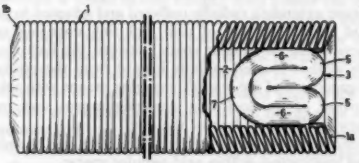
Reinhold Becker, Wiesbaden-Biebrich; Manfred Hennecken, Walluf, and Hans-Georg Zimmermann, Wiesbaden-Biebrich, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 2, 1974, Ser. No. 528,838

Claims priority, application Germany, Dec. 5, 1973, 2360480

Int. Cl.² B65D *29/00*; A22C *13/02*

U.S. Cl. 150—1 **2 Claims**



1. A unilaterally closed cylindrical hollow stick of shirred tubular casing having a closure within the stick bore in the zone of the stick beginning and formed from the casing end itself, said closure being composed of a U-shaped body of longitudinally shirred tubular casing.

3,942,570

MECHANISM FOR SECURING A NUT AGAINST LOOSENING

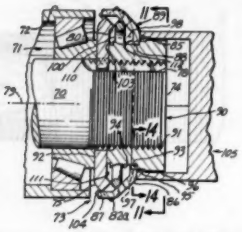
Harry L. Bochman, Jr., Seal Beach, and George S. Wing, Palos Verdes Estates, both of Calif., assignors to Hi-Shear Corporation, Torrance, Calif., a part interest

Continuation-in-part of Ser. No. 400,215, Sept. 24, 1973, Pat. No. 3,851,690. This application Nov. 15, 1974, Ser. No. 524,224

The portion of the term of this patent subsequent to Dec. 3, 1991, has been disclaimed.

Int. Cl.² F16B 39/02

U.S. Cl. 151—8 17 Claims



5. Mechanism for locking a nut on a threaded spindle having a central longitudinal axis, comprising:

a washer adapted to fit over said spindle, having an outer portion provided with washer-engaging means;

means for keying said washer to said spindle so that the washer cannot rotate but can slide axially relative to said spindle;

a lock-ring having a forward face rearward of, and spaced from said washer, said forward face having an inner hub portion adapted to be placed around said spindle behind the washer and having an outer portion provided with a first portion of a lock-ring engaging means; said hub portion having a second portion of said lock-ring engaging means extending radially inward;

at least one of said outer portions slanting obliquely outward, and toward, and meeting, the other outer portion so that said washer-engaging means engages said first portion of the lock-ring engaging means;

a threaded nut adapted to thread on the threaded spindle and having a forward portion comprising an annulus around the spindle and within the hub of the lock-ring and adapted to abut the washer, and having nut engaging means extending radially outward and adapted to engage said second portion of said lock-ring engaging means, there being an annular space between the lock-ring and the washer located radially inward from the position of engagement of the washer engaging means with said first portion of the lock-ring engaging means and radially outward from the hub of the nut;

a resiliently strainable ring whose diameter can be enlarged and contracted, within said annular space;

whereby when pressure is applied to the lock-ring in the forward direction the lock-ring moves axially forward to disengage said second portion of the lock-ring engaging means and the diameter of the strainable ring is contracted by camming action from said obliquely slanted portions, whereupon the nut can be turned on the spindle, and when said pressure is released the strainable ring returns to its normal larger diameter and pushes the lock-ring rearwardly to a position where said second portion of the lock-ring engaging means engages the nut engaging means, thereby locking the nut.

3,942,571

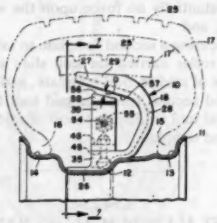
TIRE SAFETY SUPPORT

Louis Seelback Kraft, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 16, 1975, Ser. No. 541,524

Int. Cl.² B60C 17/04

U.S. Cl. 152—158 8 Claims



1. A tire safety support for use on a wheel rim to support a pneumatic tire mounted thereon in a deflated condition comprising a ring member mountable on a wheel rim inside the tire, said ring member including a rim-engaging portion, an axially extending tire tread support portion spaced radially outward from said rim-engaging portion for supporting a portion of the tire tread from the inside thereof when deflated, an intermediate portion joining said rim-engaging portion and said tread support portion, said tread support portion being radially deflectable when a radial load is applied thereto by a deflated tire, said ring member having at least one radial split extending therethrough to permit the ring to pass through the bead of the tire, a radially extending deflection limiting member mounted on said rim engaging portion and extending radially towards said tread support portion, said deflection limiting member having a radially outer supporting surface spaced a predetermined distance from said tread support portion to limit the deflection of said tread support portion.

3,942,572

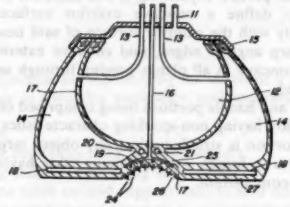
MULTICELLED, TUBELESS SAFETY TIRE WITH AIR ACTIVATED SNOW AND ICE STUDS

Azel L. Crandall, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

Filed Jan. 15, 1974, Ser. No. 433,517

Int. Cl.² B60C 11/14

U.S. Cl. 152—208 3 Claims



1. A safety tire comprising an outer casing and an inner tube mounted in said casing, wherein the inner tube is spaced from said casing forming inner and outer air cells, including a traction air cell formed peripherally in said outer casing symmetrical about a vertical plane passing through the center of said tire, wherein said tire has a peripheral thread having a relatively, flexible center section encompassing said traction air cell and stiff adjacent thread portions, including spring means embedded in said center sections biasing said center section radially inward to assume a normally concave position relative

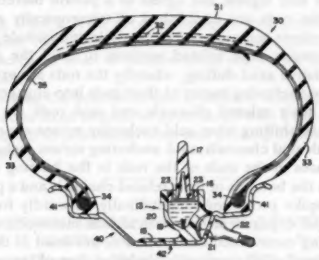
to the adjacent thread portions, including air valves for the inner and outer cells and a separate air valve for said traction cell, wherein said tube and casing are joined between the inner air cell and the center section to provide a center wall completing the enclosure of said traction air cell, whereby inflation of said traction air cell causes the outward movement of the center section to assume a convex position, in further combination with studs mounted on said center section and protruding outwardly therefrom.

3,942,573

TIRE LUBRICATING DEVICE

James Philip Lawrence, Wadsworth, and James Dennis Gardner, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jan. 30, 1975, Ser. No. 545,262
Int. Cl.² B60C 17/00, 19/12
U.S. Cl. 152—330 L 15 Claims



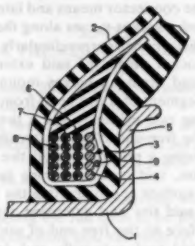
1. In combination, a pneumatic tire, a rim and an annular reservoir member, said tire having an annular road-engaging tread surface, sidewall portions connecting each side of said tread surface to annular bead rings, said rim having an annular drop center area and a rim flange located axially outwardly of said drop center area on both sides thereof, said tire adapted to be mounted on said rim, said annular reservoir member comprising a flexible, annular tube, a continuous, annular, inextensible fastener means, and a hollow valve member, said valve member having a hollow chamber connected to two lateral, hollow end portions, a supporting foot member intermediate said end portions adapted to rest in the drop center area of the rim, a hole intermediate said end portions opposite said foot member, and a breakable member adapted to fit said hole to seal said valve member, the ends of said annular tube connected to said hollow ends of said valve member in sealed relationship to yield a continuous annulus, said fastener means located in said continuous annulus formed by said annular tube and valve member, said fastener means adapted to be tightened to restrict the circumference of said annular tube to constrict said annular tube into gripping relationship with said drop center area of said rim while permitting said tube to retain sufficient axial and radial flexability to permit the beads of said tire to enter the drop center area of said rim during mounting thereon, said annular reservoir member containing a fluid and positioned so that said fluid is retained in said annular reservoir member during normal operation of the tire and said fluid is released into the tire cavity when said tire is run flat to lubricate the inner periphery of said tire by said tire breaking said breakable member in its run-flat operation.

3,942,574

TIRE BEAD

Robert L. Bantz, Cumberland, Md., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 16, 1974, Ser. No. 533,043
Int. Cl.² B60D 15/04
U.S. Cl. 152—362 R 7 Claims



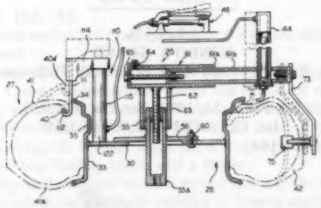
1. A tire bead consisting of a plurality of cords composed of aramid fibers and a single cord composed of metal for stiffening the bead.

3,942,575

PORTABLE TIRE CHANGING APPARATUS AND METHOD FOR MOUNTING AND DEMOUNTING HEAVY DUTY TIRES ON A WHEEL

Oscar C. Blomgren, Sr., and Oscar C. Blomgren, Jr., both of Lake Bluff, Ill., assignors to Tuxco Corporation, North Chicago, Ill.

Filed Aug. 9, 1974, Ser. No. 496,076
Int. Cl.² B60C 25/06
U.S. Cl. 157—1.26 16 Claims



1. Portable tire changing assembly for demounting a heavy duty tire from a wheel having flanged drop center rim and a hub in the center of said wheel with a central opening extending therethrough, said assembly comprising an anchor member having a tubular body and flange means for attaching the body to the hub and substantially axially of the wheel so the opposed ends of the body extend to opposite sides of the hub, an extensible arm having connector means thereon for rotatably mounting said arm to either of said tubular body opposed ends, a sectional tubular body extending generally perpendicular to the connector means and laterally therefrom, said sectional tubular body including telescopically coacting sections and axially aligned threaded means for adjusting and applying an axial force to the sections to vary the arm length, and hydraulic cylinder socket means along the sectional tubular body, a hydraulic cylinder perpendicularly mounted to and retained by the socket means of said extensible arm, said cylinder having bead breaking means mounted thereon for forcing at least a segment of a tire bead from said rim flange, and means for actuating said cylinder.

6. Portable tire changing assembly for demounting a heavy duty tire from a wheel having a flanged drop center rim and

a hub in the center of said wheel with a central opening extending therethrough, said assembly comprising an anchor member having a tubular body and flange means for attaching the body to the hub and substantially axially of the wheel so the opposed ends of the body extend to opposite sides of the hub, an extensible arm having connector means thereon for rotatably mounting said arm to either of said tubular body opposed ends, a sectional tubular body extending generally perpendicular to the connector means and laterally therefrom, and hydraulic cylinder socket means along the sectional tubular body, a hydraulic cylinder perpendicularly mounted to and retained by the socket means of said extensible arm, said cylinder having bead breaking means mounted thereon for forcing at least a segment of a tire bead from said rim flange, means for actuating said cylinder, and a tire tread retaining tool attached to the free end of said extensible arm member for assisting in forcing a portion of said tire into said wheel drop center portion, said tread retaining tool including an elongated arcuate surface approximating the curvature of the circumference of said tire and extension means connecting said elongated surface to the free end of said extensible arm and maintaining said tool outwardly and downwardly from said extensible arm whereby said tool fits the tire longitudinally along a portion of said circumference.

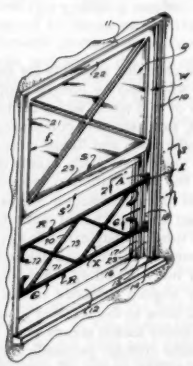
9. Portable tire changing assembly for mounting a heavy duty tire on a wheel having a flanged drop center rim including a hub in the center of said rim with a central opening extending therethrough, said assembly comprising a hydraulic cylinder, means for operating said hydraulic cylinder, and means mounted on said hydraulic cylinder for engaging at least a portion of a bead on said tire to stretch over said rim flange, a cylinder retaining hook including a curved end which engages the central opening in the hub and an offset end bearing against the wheel rim with means thereon for retaining one end of said cylinder and allowing said cylinder to be mounted in any angular position relative said wheel, and a pair of clamps each having means thereon for clamping onto one of said rim flanges and means for retaining a portion of the tire bead between the rim flanges.

3,942,576

WINDOW GUARD

James E. Rickard, 7324 Atoll St., North Hollywood, Calif. 91605

Filed Feb. 24, 1972, Ser. No. 228,931
Int. Cl.[2] A47H 1/00; E06B 3/00
U.S. Cl. 160—104 **2 Claims**



1. In combination a double hung window structure and guard structure therefor, said window structure including a rectangular frame with laterally spaced vertical side members with inner and outer vertical channels with flat bottoms, a horizontal header and a horizontal sill, an upper outer rectangular sash with sides slidably engaged in the outer channels, a top edge normally engaged with the header and a bottom edge spaced about midway between the header and sill and opposing the sill, a lower inner rectangular sash with sides slidably engaged in the inner channels, a top edge about midway between the header and the sill and opposing the header and a bottom edge normally engaged with the sill, the guard structure comprising vertically spaced horizontal upper and lower rods with upper and lower edges, anchoring means at the ends of the rods engaged with the outer channels, and grating secured to and extending longitudinally of and between the rods, the upper edge of the upper rod and the lower edge of the lower rod being normally spaced from their opposing bottom edge of the upper sash and the sill predetermined limited distances, said upper edge of the upper rod engaging the lower edge of the outer sash upon downward shifting of the outer sash to stop said outer sash with its top edge in predetermined limited vertical spaced relationship from the header, the normal distance between the rods and the sill and the bottom of the outer sash is less than 8 inches and the distance between the header and the top edge of the outer sash is less than 8 inches when said outer sash is shifted down and engaged with the guard whereby the vertical extent of all unobstructed openings in the window and guard structure inhibit the free ingress and egress of a person therethrough, wherein the rods are established of telescopically engaged tubular sections and are axially extensible and include locking means between their related sections to hold the sections against relative axial shifting, whereby the rods are extensible to urge the anchoring means at their ends into engagement in and with their related channels and said rods are locked against axial shifting when said anchoring means are engaged in and with said channels, said anchoring means includes flat stop surfaces at the ends of the rods in flat bearing engagement with the bottoms of their related channels and a plurality of sharp spike projecting longitudinally outwardly from said surface and engaged in the vertical side members, wherein said locking means includes a wood dowel fixed in the inner of said telescopically engaged tubular section of the rods and projecting therefrom in sliding engagement in the outer tubular sections related thereto, openings in the sides of the outer tubular sections and disposed toward the inside of the window structure fasteners engaged in and through said openings and into said dowels.

3,942,577

METHOD AND APPARATUS FOR CONTROLLING ELECTROMAGNETIC CASTING

Minoru Uozumi; Fumio Kawano, both of Toyota, and Norio Iwama, Aichi, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Toyota Chuo Kenkyusho, both of, Japan

Filed July 17, 1974, Ser. No. 489,158
Claims priority, application Japan, July 18, 1973, 48-81066
Int. Cl.[2] B22D 27/02
U.S. Cl. 164—4 **6 Claims**

1. A method of casting molten metal from a pouring basin having a pouring hole into molds wherein the casting times for the molds is held constant, said method utilizing the travelling magnetic field of a magnet coil energized by three-phase current, and which has a winding symmetric to a coil iron core at one phase; and comprising the steps of:

uniformly increasing the input current in said symmetric winding at a rate which the flow of said molten metal can sufficiently follow;

drawing said molten metal up to a level necessary for pouring from said hole by an electromagnetic force of said travelling magnetic field, and fixing a value of the current flowing to the symmetric winding when sad molten metal reaches said level necessary for pouring from said hole;

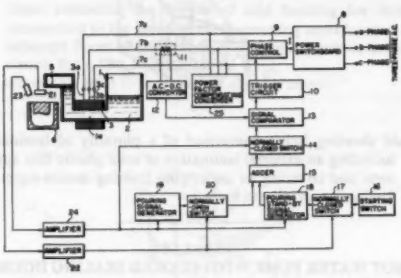
increasing the current in said symmetric winding in conformity with a predetermined pattern from the fixed value in

order to raise said molten metal and pour it from said pouring hole; and

making the current of said symmetric winding zero in order to stop the pouring upon detection that said mold has been filled up with said molten metal,

raising the molten metal to the pouring hole for the next casting by increasing the current in said symmetric winding from a level corresponding to said previously fixed value by a second fixed amount corresponding to the decreased level of molten metal due to the first pouring and

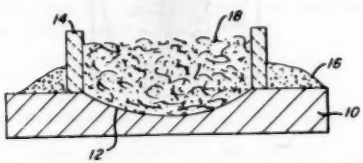
increasing the amount in said symmetric winding above said second fixed amount in accordance with a predetermined pattern to pour metal from said pouring hole for said next casting.



3,942,578
METHOD OF REPAIRING LARGE CASTINGS

Robert H. Kachik, Washington Township, Westmoreland County; Samuel J. Manganello, Penn Hills Township, Allegheny County, and Arthur J. Pignocco, Franklin Township, Westmoreland County, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 332,870, Feb. 15, 1973, abandoned.
This application Oct. 25, 1974, Ser. No. 517,992
Int. Cl.² B23K 23/00
U.S. Cl. 164—54 3 Claims



1. A method of repairing a defect in a large metal casting, consisting of:

placing a graphite refractory containment apparatus on the casting around the defect and forming a joint with the casting;

placing loose particulate insulating material on said casting around said joint;

filling said containment apparatus to a predetermined level with an exothermic reaction mixture in direct contact with said metal casting;

igniting the mixture to form a superheated melt comprising a heavier metal phase and a lighter slag phase;

maintaining said melt in contact with said casting for a time sufficient to allow said melt to separate into said metal phase in contact with said casting and said slag phase thereover and to permit said metal phase to enter and fill said defect;

solidifying said melt to form a metallurgically bonded weldment in said defect; and

removing said containment apparatus and the overlying solidified slag.

3,942,579
PROCESS FOR THE ALUMINOTHERMIC WELDING OF RAILS

Hans Guntermann, Essen-Steele, Germany, assignor to Elektro-Thermit GmbH., Germany

Continuation of Ser. No. 327,314, Jan. 29, 1973, abandoned.
This application June 17, 1975, Ser. No. 587,572
Int. Cl.² B23K 23/00
U.S. Cl. 164—54 7 Claims

1. A process for the aluminothermic welding of rails; comprising, surrounding the rail ends to be joined by a refractory casting mold, preheating said rail ends for a period of time of up to 2 minutes at a temperature between about 300°C and about 700°C, and pouring aluminothermically produced steel into said casting mold in an amount between about 0.15 and about 0.25 parts by weight based on the weight per meter of the rails to be welded.

3,942,580
CASTING OF INGOTS

Ian Hazlehurst, Birmingham, England, assignor to Foseco International Limited, Birmingham, England

Filed Apr. 12, 1974, Ser. No. 460,579
Claims priority, application United Kingdom, Apr. 27, 1973, 20213/73
Int. Cl.² B22D 7/12
U.S. Cl. 164—55 4 Claims

1. In the method of casting an ingot, the improvement which comprises:

locating on the floor of an ingot mould a splashcan formed of a composition which, under the action of the heat of the molten metal, melts to form a molten casting flux, said composition consisting essentially of a minor proportion of inorganic fibrous material, a major proportion of at least one fluxing agent, and a binder,

passing molten metal into the mould and into the splashcan, the splashcan gradually melting to form a casting flux on the molten metal and coating the walls of the ingot mould with casting flux as the level of molten metal rises in the ingot, and

allowing the molten metal to solidify in the mould.

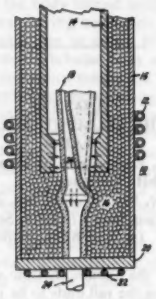
3,942,581
METHOD AND APPARATUS FOR CASTING DIRECTIONALLY SOLIDIFIED ARTICLES

Thomas F. Sawyer, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 29, 1974, Ser. No. 527,945
Int. Cl.² B22D 25/06
U.S. Cl. 164—60 10 Claims

4. In the casting of superalloys wherein molten alloy is introduced into a movable mold extending into a heating zone and gradually lowering the mold and simultaneously chilling the lower end of the mold to achieve directional solidification, the improvement comprising disposing a plurality of hollow ceramic bodies around the mold such that as the mold is

lowered, the bodies conform to and form a contacting insulating layer around the outside surface of the mold as it is exposed below the heating zone whereby lateral heat transfer is prevented.

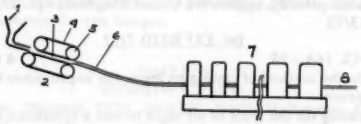


3,942,582

MANUFACTURE OF COPPER WIRE ROD

John M. Dompas, Olen; Jean L. J. E. Ghyselen, Embourg, and Rene E. J. Mortier, Olen, all of Belgium, assignors to Metallurgie Hoboken-Overpelt, Brussels, Belgium

Filed Apr. 16, 1974, Ser. No. 461,325
Claims priority, application Belgium, Apr. 27, 1973, 130474
Int. Cl.² B22D *11/06, 11/12*
U.S. Cl. 164—76 5 Claims



1. A process for the manufacture of copper wire rod, in which liquid copper is cast in a continuous casting machine provided with an inclined straight moulding cavity to produce a continuous bar of copper, comprising guiding said bar as it leaves the casting machine towards a horizontal rolling machine along a curved path, the maximum curvature of the curved path being less than 0.25 m^{-1} and the cross-section of the bar being more than 70 times larger than the cross-section of the wire rod to be produced.

3,942,583

LOST PLASTIC PATTERN FOR CASTING

Eduard Baur, Hohenzollernring 84, 5 Cologne, Germany

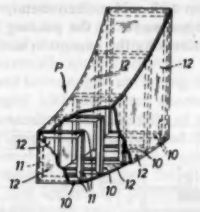
Filed May 27, 1970, Ser. No. 51,401
Claims priority, application Germany, May 30, 1969, 1927538
Int. Cl.² B22C *7/02*
U.S. Cl. 164—246 10 Claims

1. A lost plastic pattern for use in producing metal casting molds, comprising:

internal framework means comprised of a plurality of peripherally continuous open frame sub-assemblies, said sub-assemblies spaced from each other; and

external sheeting applied as sheathing means secured to and supported by said framework means and defining the mold-cavity-determining, pattern-external-surface contour, and constituting with the framework means a composite pattern hollow in the pattern section providing the cast metal filled cavity of the mold to be produced;

said framework means and sheathing means comprised of respective synthetic plastic material gasifiable or burnable under applied heat, and substantially ashless;



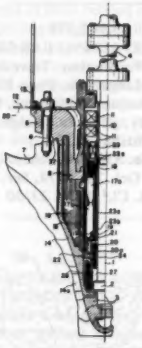
said sheeting being comprised of a plurality of laminations including an external lamination of solid plastic film applied onto and covering an underlying framing-means-supported lamination of plastic foam.

3,942,584

HOT WATER PUMP WITH COOLED SEALING HOUSING

Rudolf Wieser, Voitsberg, Austria, assignor to Maschinenfabrik Andritz Actiengesellschaft, Austria

Filed May 10, 1972, Ser. No. 251,868
Claims priority, application Austria, June 29, 1971, 5634/71
Int. Cl. F24h *3/00*
U.S. Cl. 165—47 41 Claims



1. In a hot water pump having a cooled sealing housing in a pump cover in the upper pump portion, the improvement which comprises means mounting the sealing housing in a recess of the pump cover in a manner such that an annular air space is present between the outer surface of said sealing housing and the inner surface of the recess of the pump cover, said air space being in communication with the exterior space surrounding the pump.

3,942,585

FOUR RISER HEATING AND COOLING SYSTEM

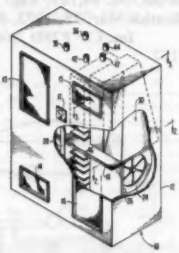
James J. Whalen, Clarkson Drive, Fulton, Md. 20759

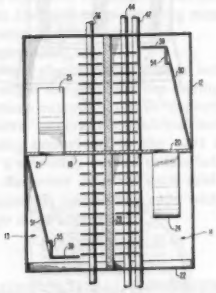
Filed June 7, 1974, Ser. No. 477,342
Int. Cl.² F24F *3/00*
U.S. Cl. 165—50 14 Claims

1. A unit for heating or cooling air in a room of a multistory building comprising:

a housing having a first and a second compartment;

a first air inlet in said first compartment;
a first air outlet in said first compartment;
a first heat exchanger in siad first compartment;
first circulating means in said first compartment for drawing air into said first air inlet, flowing the air through said first compartment in a path passing over said first heat exchanger, and discharging the air through said first air outlet;
said first heat exchanger including two substantially vertical risers extending the length of said housing for direct connection to the risers of corresponding units located on adjacent floors of the building to form a continuous flow circuit for a first heat exchange fluid;
a second air inlet in said second compartment;





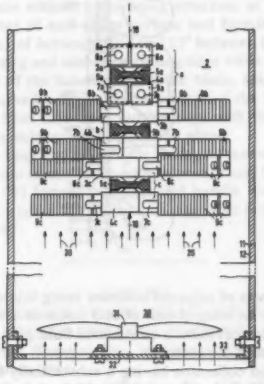
a second air outlet in said second compartment;
a second heat exchanger in said second compartment;
second circulating means in said second compartment for drawing air into said second air inlet, flowing the air through said second compartment in a path passing over said second heat exchanger, and discharging the air through said second air outlet;
said second heat exchanger including two substantially vertical risers extending the length of said housing for direct connection to the risers of corresponding units located on adjacent floors of the building to form a continuous flow circuit for a second heat exchange fluid; and
a single thermostat means connected to said first and second circulating means for operating said first and second circulating means responsive to the temperature in the room whereby selected stories of the building can be heated while others are simultaneously cooled.

3,942,586

COOLING ARRANGEMENT FOR FLAT SEMICONDUCTOR COMPONENTS

Paul Fries, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed July 25, 1974, Ser. No. 491,779
Claims priority, application Germany, Aug. 14, 1973, 2341097
Int. Cl.² F28D *15/00;* **H01L** *3/00, 5/00*
U.S. Cl. 165—105 **5 Claims**



1. A cooling arrangement for a plurality of flat semiconductor components such as disc-type thyristors, made up of a plurality of cooling arrangements each comprising two cooling elements of thermally highly conductive material with a semiconductor clamped therebetween in good thermal contact, with each cooling element provided with at least one elongated recess into which is inserted in good thermal contact a portion of a heat pipe closed on both sides, lined on the inside with a wick and partially filled with an evaporable working fluid with cooling fins attached with good thermal contact on the protruding portion of the heat pipes transversely to their axes, comprising a plurality of individual cooling arrangements arranged in a column-like cooling stack with the individual semiconductor components axially aligned with each other and the axes of the heat pipes of the cooling element placed one on top of the other and arranged such that they are angularly displaced with respect to each other about the axis of the stack in helical fashion with the helix so formed having a first direction of rotation, and a blower forcing air through said column, said blower having a direction or rotation, as viewed in the flow direction of the coolant, which is opposite to the direction of rotation of said helical arrangement of heat pipes.

3,942,587

HEAT CONVECTOR FOR USE IN BUILDINGS

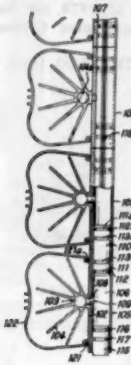
Michel Favier, Bezange-la-Petite, France, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Continuation of Ser. No. 342,449, March 19, 1973, abandoned. This application Aug. 26, 1974, Ser. No. 500,589
Claims priority, application France, Mar. 23, 1972, 72.10136; Mar. 13, 1972, 72.8834
Int. Cl.² F24H *9/08*
U.S. Cl. 165—129 **7 Claims**

1. A heat convector for use in a space, comprising, in combination:
a plurality of heating columns disposed adjacent each other;
a pipe disposed in each of said columns for conducting a fluid;

a plurality of heat exchange ribs integral with each pipe; and

a collector near each end of said heating column and in communication with the pipe therein for the supply of the fluid;



the collectors of adjacent columns being interconnectable, whereby an integral unit of said columns is obtained and said collectors form a continuous fluid path at each end of said heat convector;

each of said collectros having a substantially flat assembly surface aligned with and adjacent the column to which it is connected.

3,942,588

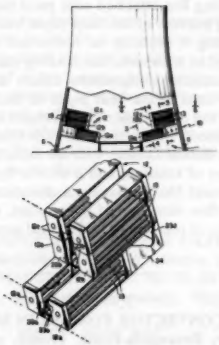
COOLING TOWER

Willem Schoonman, Wyckoff, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Nov. 4, 1974, Ser. No. 520,790

Int. Cl.² F28F 13/00

U.S. Cl. 165—129 **5 Claims**



1. A cooling tower, comprising:

a hollow tower; a plurality of radially extending tubular heat exchanger units circumferentially spaced within the lower portion of the tower, said heat exchanger units having their heat exchanger surfaces extending in an inclined vertical plane, each of said heat exchanger units having a radial inner end and a radial outer end, the width in the vertical direction of the radial outer end being greater than the width, in the vertical direction, of the radial inner end, each of said heat exchanger units comprising first, second and third heat exchangers, the first heat exchanger comprising the radial inner end of the heat exchanger unit, said second and third heat exchangers being superimposed one on top of the other with the heat exchanger surfaces in a vertical plane, said superimposed second and third heat exchangers comprising the radial outer end of said heat exchanger unit; and air directing means for directing air which enters the tower through the heat exchanger units.

3,942,589

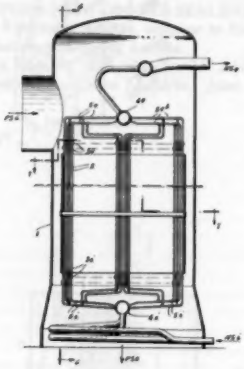
SHELL AND TUBE HEAT EXCHANGER

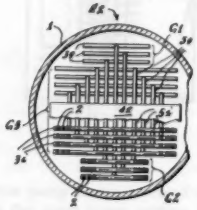
Rudolf Opitzer, Oberhausen, Germany, assignor to Deutsche Babcock & Wilcox Aktiengesellschaft, Oberhausen, Germany

Continuation of Ser. No. 64,189, Aug. 17, 1970, abandoned. This application Mar. 28, 1973, Ser. No. 345,599

Int. Cl.² F28D 7/00

U.S. Cl. 165—157 **7 Claims**





1. A shell and tube heat exchanger arranged to uniformly heat power steam of varying moisture distribution and hence different local heat transfer requirements, without degenerative heat transfer conditions arising as the power steam passing through the shell is heated by heating steam passing through heating tubes, the exchanger being of the type having steam distribution elements including a main inlet header adapted to distribute heating steam to the heating tubes, a main outlet header located to collect the heating steam from the heating tubes, a plurality of pairs of inlet and outlet subheaders, feeder tubes for coupling each of the inlet and outlet subheaders to the main inlet header and main outlet header respectively, and heating tubes coupling the inlet and outlet subheaders of each pair, said heat exchanger being character-

ized by an improved arrangement of the distribution elements to provide improved allocation of the heating steam in which:

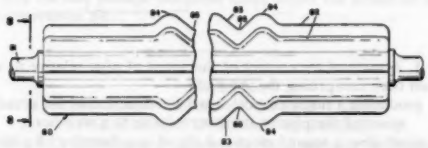
the cross-sectional area of the flow paths in the feeder tubes is substantially the same, the length of each of the inlet subheaders per feeder tube connected thereto is substantially the same, and there are substantially the same number of heating pipes per unit length of inlet subheader whereby power steam of varying moisture distribution is heated with steam pressure loads remaining independent of heat transfer variations in the individual heating tubes.

3,942,590

TOMATO HARVESTER

William C. Friedel, Jr.; Charles F. Dietz, both of Rio Vista, and Lowell K. Marshall, Sacramento, all of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed May 25, 1973, Ser. No. 364,047
Int. Cl.² A01D *17/00*
U.S. Cl. 171—5 **2 Claims**



1. In a row-crop harvester for tomatoes and the like having crop-severing means, crop-elevating means for picking up the severed plants and lifting them well above the ground and depositing them in a separator where the fruit is received from the stalks and leaves,

a spinner adjacent to the forward end of said crop-elevating means in an operative relationship between said crop-severing means and said crop-elevating means, said spinner being characterized by comprising

a central support shaft and

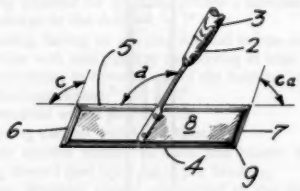
a unitary molded elastomeric member molded about said shaft as a single integral member having a series of flat paddle portions extending out in respective radial planes from a central generally cylindrical core, each paddle portion being connected to the next adjacent paddle portion by a smoothly curved radius bridging portion at said core, the outer edge of each said paddle portion having a smoothly undulating edge with radius turns at each change of direction.

3,942,591

AGRICULTURAL IMPLEMENT

Jafie R. Brannin, 3535 St. Germaine Court, Louisville, Ky. 40207

Filed Aug. 5, 1974, Ser. No. 494,791
Int. Cl.² A01B *1/08, 1/10;* B26B *3/00, 9/02*
U.S. Cl. 172—371 **1 Claim**



1. An agriculture implement comprising: a flat rhomboidal blade having an upper and lower surface beveled from the upper surface to the lower surface forming parallel front and back cutting edges, and forming opposed parallel side cutting edges connecting the front and back cutting edges, said front and back cutting edges being of substantially greater length than the side cutting edges, the back cutting edge being the edge nearest a single curved tang which connects said flat rhomboidal blade with a handle extending rearwardly to an end;

the right side cutting edge when viewed from the end of the handle toward the blade forming an obtuse angle (*c*) of between 100° and 120° with said back cutting edge;

said single tang attached directly to the upper surface of said blade without intervening structure at substantially the center of said upper surface and forming an obtuse angle (*a*) of between 105° to 135° between the right side of said tang and said back cutting edge when viewed from the end of the handle toward the blade, said single tang being curved concavely upward toward the handle when viewed from said front cutting edge with the lower surface in a substantially horizontal plane;

said single tang and said handle having no means for angular adjustment of said blade with respect to said handle; and

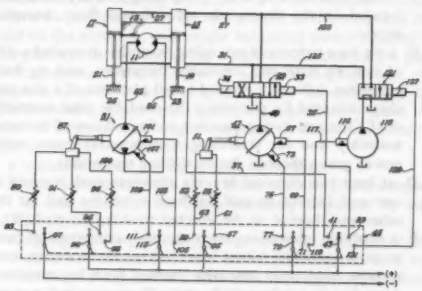
the angle (*b*) formed between said handle and said lower surface relative to said back cutting edge ranges between 30° to 50°.

3,942,592

DRILL STEM MAKE-UP AND BREAK-OUT SYSTEM FOR EARTH DRILLING MACHINES

Lee Roy Hodge, Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Aug. 12, 1974, Ser. No. 497,172
Int. Cl.² E21C *1/10*
U.S. Cl. 173—157 **8 Claims**



6. A drill stem make-up and break-out system for earth drilling machines, said system comprising:

a hydraulic swivel adapted to raise or lower, as well as rotate, the drill stem;

motor means to rotate the swivel;

at least one hydraulic means connected with the swivel to move it upward or downward during make-up and break-out and during drilling;

a pump, with variable volume control means, connected with the motor means of the swivel;

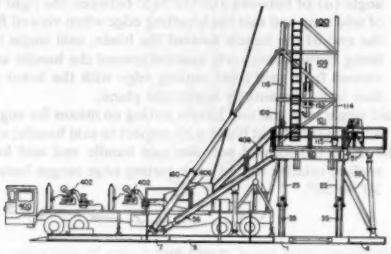
a pump, with variable volume control means, connected with the hydraulic means;

means to synchronize the linear displacement and rotational speed of said swivel to correlate with the lead of the threads of said drill stem during make-up and break-out.

3,942,593
DRILL RIG APPARATUS

John R. Reeve, Jr.; Ralph Busse; Elbert Walker; Raymond L. Welch; Hermus C. Moore, Jr., and Milton P. Jones, all of Pampa, Tex., assignors to Cabot Corporation, Boston, Mass.

Filed Oct. 17, 1973, Ser. No. 407,098
Int. Cl.² E21B 7/02
U.S. Cl. 173—23 31 Claims



1. A mobile drill rig apparatus comprising:

A. a rig base having a drawworks side and, opposite thereto, a V-door side;

B. a working floor adapted for erection in spaced relationship above said rig base by means of a plurality of freely slidable and lockable support members stationed therebetween, said working floor comprising a rotary table and, located on the drawworks side of said floor, trunnion means;

C. a rig base extension extending from the drawworks side of said rig base and separable therefrom, said rig base extension defining a ground-based platform of a size and shape adapted for stationing the roadable mast assembly of (E) thereon during erection and takedown of the mast assembly and for stationing a drawworks/rotary table power group thereon during drilling operations;

D. at least two diagonal bracing elements each secured at one end thereof to said rig base extension and, at the other end thereof, to the erected working floor of (B);

E. a roadable telescoping mast assembly composed of mast sections including a base mast section and a crown mast section, said mast assembly having four leg members extending in a substantially mutually convergent manner from the base to the crown thereof, said leg members defining the four corners of the mast assembly; said mast assembly having a V-door side and, opposite thereto, a drawworks side; said mast assembly being adapted for roading thereof in the retracted condition and in a substantially horizontal position with the V-door side thereof up; the lower ends of the drawworks side mast leg members of said base mast section being equipped with trunnion engaging means adapted to engage said trunnion means of the working floor of (B) in substantially vertically pivotal relationship;

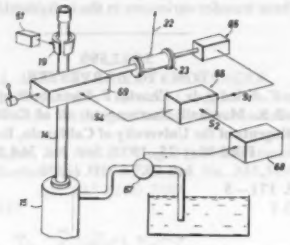
F. means to raise the base mast section of the roadable mast assembly of (E) from its horizontal position located on the rig base extension of (C) to the erected working floor of (B) and means to bring said trunnion engaging means into engagement with said trunnion means of said working floor; and

G. mast raising means located on the drawworks side of the rig assembly to raise the mast assembly of (E) to the vertical on the working floor of (B).

3,942,594
DRILL PIPE MONITORING SYSTEM

Hubert Irvin Smith, and Fred L. Ott, both of Houston, Tex., assignors to Drill-Au-Mation, Inc., Houston, Tex.

Division of Ser. No. 294,963, Oct. 4, 1972, Pat. No. 3,866,468.
This application Nov. 11, 1974, Ser. No. 522,628
Int. Cl.² E21B 19/08
U.S. Cl. 175—27 8 Claims



1. A method for control of the speed of pipe relative to a well bore comprising the steps of:

producing a first electrical signal as a function of the actual speed of the pipe as it moves relative to a well bore,

producing a second electrical signal as a function of a desired speed value,

comparing said first and second electrical signals and producing at least one electrical output signal as a function of the pre-established difference between said first and second electrical signals,

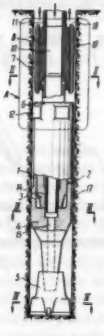
applying said one output signal to a speed control means for the pipe to regulate the speed to a value within said pre-established difference, and

producing a third electrical signal as a function of the flow rate for the mud system in a well and decreasing the speed of the pipe as a function of any decrease in the flow rate.

3,942,595
SELF-PROPELLED PERCUSSIVE MACHINE FOR BORING HOLES

Boris Vasilievich Sudnishnikov, Krasny prospekt, 56, kv. 59; Veniamin Viktorovich Kamensky, ulitsa Derzhavina, 19, kv. 70; Eduard Petrovich Varnello, ulitsa Dzerzhinskogo, 3, kv. 19, and Sergei Konstantinovich Tupitsyn, ulitsa Zorge, 123, kv. 31, all of Novosibirsk, U.S.S.R.

Filed Nov. 14, 1974, Ser. No. 523,798
Int. Cl.² E21B 1/06
U.S. Cl. 175—99 5 Claims



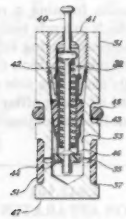
1. A self-propelled percussive machine for boring holes in rocks comprising: a housing; an impact mechanism accomodated in said housing and having a reciprocating ham-

mer piston; a rock-destroying member mounted on the forward part of said housing, the hammer piston of said impact mechanism imparting impact pulses to said rock-destroying member during its reciprocation; an air-supply duct for supplying compressed air both to said impact mechanism for operating it and to the hole face for removing rock disintegration products from the borehole; means for preventing said self-propelled machine from moving away from the hole face during the operation, said means being mounted on said housing and comprising an elastic tubular member having an internal space in permanent communication with said air-supply duct, said elastic tubular member including radial projections and being deformed under the action of the compressed air to urge said radial projections against the borehole wall thus preventing the self-propelled machine from moving away from the hole face during the operation, said tubular member defining a clear space with the wall of the hole which space is permanently open during the operation, said housing defining an open passage with the wall of the hole leading to said clear space so that rock particles can flow continuously from the hole via said passage and clear space under the action of the compressed air.

3,942,596
LUBRICANT PRESSURE RELIEF VALVE FOR EARTH PENETRATING TOOLS

Stuart C. Millsapps, Jr., Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed May 3, 1974, Ser. No. 466,641
Int. Cl.² F16K 17/02; F16N 23/00
U.S. Cl. 175—227 **4 Claims**



1. For use in combination with a lubricated, rotatable cutter type earth boring drill bit, an improved lubricant pressure relief valve comprising:

a housing adapted for retention within a lubricant containing passage in the drill bit;

said housing having an opening formed in one end to communicate with said passage and having at least one outlet port extending to the exterior of the housing and the drill bit when assembled;

a tube secured within the housing;

a coil spring carried within the tube;

a plunger carried within the tube and biased by the coil spring toward said opening in the housing;

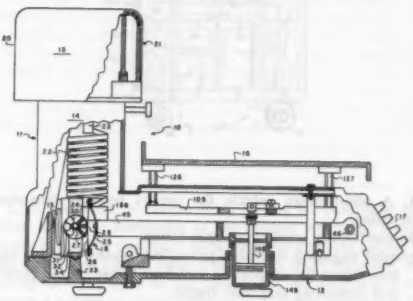
a resilient shoulder rigidly connected to the plunger and biased by the spring against the tube;

an elastic means carried by the housing and covering said port to release lubricant therefrom and exclude the entrance of exterior matter; said elastic means operable to release lubricant at a selected pressure lower than said spring.

3,942,597
BALANCING MEANS FOR A WEIGHING SCALE

Edward C. Karp, Belvidere, Ill., assignor to Sanitary Scale Company, Belvidere, Ill.

Filed May 23, 1975, Ser. No. 580,154
Int. Cl.² G01G 23/00
U.S. Cl. 177—230 **9 Claims**



1. In a weighing scale apparatus of the type which includes a platform upon which a load to be weighed is placed, a resilient means coupled to the platform and to a stationary portion of the scale for causing the platform to be displaced from a reference position by an amount related to the weight of the load on the platform, and weight indicating means coupled to the platform for indicating the weight of the load on the platform responsive to the degree of platform displacement, the improvement of a balancing means for compensating for non-linearities in platform displacement to thereby cause the relation between load weight and platform displacement to be substantially linear comprising:

a rotatable wheel having an axis of rotation;

a lever arm pivoted at a pivot point at one end and coupled to said platform for being arcuately displaced by said platform;

coupling means including a bow-shaped member at the other end of said lever and a ribbon having two ends and an inner elongated slot, said ribbon being wrapped about said wheel with a portion of said ribbon passing through said slot and said ends attached to said bow-shaped member for causing said wheel to rotate with platform displacement while minimizing friction by exerting only forces on said wheel which are transverse to said axis of rotation and said bow-shaped member being bowed away from said rotatable wheel and spaced from said rotatable wheel such that said ribbon acts upon said rotatable wheel at a point along an arc which is tangent to said rotatable wheel and which has its center at said pivot point;

a shaft extending from said rotatable wheel having an axis of rotation concentric with that of said wheel; and

a plurality of balance weights extending radially from said shaft and arcuately spaced apart from one another whereby,

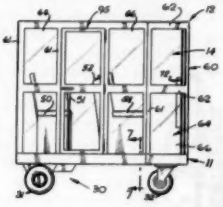
as said platform is displaced by a load on the platform, said wheel is rotated causing said balance weights to act upon the platform and resilient means to thereby render the load weight and platform displacement relationship substantially linear.

3,942,598

NON-HOSTAGE VEHICLE

Henry M. Council, 319 Ashburton Ave., SE., Atlanta, Ga. 30317

Filed Aug. 19, 1974, Ser. No. 498,479
Int. Cl.² B62D 11/04
U.S. Cl. 180—6.5 7 Claims



1. A non-hostage vehicle for use by security personnel comprising:

an electrically conductive base frame;

ground engaging steerable propelling means carrying said base frame for supporting said base frame on the ground and propelling said base frame;

a support platform carried within the confines of said base frame for supporting security personnel thereon, said support platform electrically insulated from said base frame;

a protective cage mounted on said base frame and defining an enclosed security chamber therein over said support platform, said cage including a cage framework defining openings therethrough and see-through security panels closing said openings, and said cage framework is electrically conductive;

control means within said security chamber for operating said propelling means; and

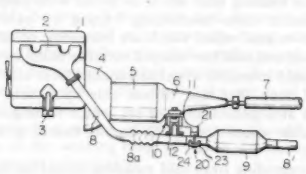
high voltage, low current charging means electrically connected to said base frame and said cage framework for imposing a high voltage, low current thereon, said control means further including switch means for selectively enabling and disabling said charging means.

3,942,599

APPARATUS FOR SUPPORTING CATALYTIC CONVERTERS ON MOTOR CARS

Yukio Shimada, Yokohama, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan

Filed July 11, 1974, Ser. No. 487,657
Claims priority, application Japan, July 13, 1973, 48-83204
Int. Cl.² B60K 13/04
U.S. Cl. 180—64 A 6 Claims



1. In a motor vehicle having an engine and a transmission gear box supported through cushion means on a beam secured to the body of said vehicle, and an exhaust system having a catalytic converter operatively connected to an exhaust manifold of said engine through an exhaust pipe, the improvement comprising:

a basic member interposed between said transmission gear box and said cushion means and secured to said transmission gear box so that said basic member is vibrated substantially integrally with said engine;

a cushion member; and

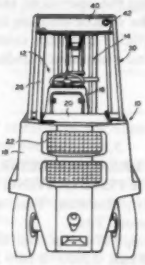
an exhaust pipe holding member having one end connected to said basic member through said cushion member, and the other end securing said exhaust pipe.

3,942,600

LIFT TRUCK WITH MUFFLER IN OVERHEAD GUARD

Donald J. DePriester, and Neal J. Marks, both of Niles, Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Nov. 27, 1974, Ser. No. 527,661
Int. Cl.² B60K 13/04
U.S. Cl. 180—64 A 6 Claims



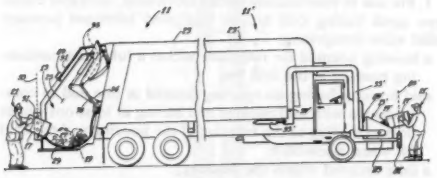
1. In an industrial truck having an engine and an operator's compartment, an overhead guard extending over the operator's compartment, means forming a recess at the top rear portion of the guard which extends transversely of the guard, a muffler located in the recess being supported in said recess out of contact with the means which form the recess, a tail pipe extending upwardly along one side of the overhead guard to connect the one end of the muffler to the engine, and a muffler exhaust element located adjacent the opposite side of the guard.

3,942,601

REFUSE COLLECTION APPARATUS WITH PERSONNEL PROTECTION MEANS

Fred T. Smith, Palos Verdes Peninsula, Calif., assignor to Sargent Industries, Inc., Los Angeles, Calif.

Filed Apr. 18, 1974, Ser. No. 461,920
Int. Cl.² B60K 28/00
U.S. Cl. 180—82 R 21 Claims



1. A vehicle for collecting refuse having a storage body and a hopper into which personnel associated with the vehicle initially dump the refuse, the vehicle further comprising:

displacement means for displacing the refuse from the hopper into the storage body, the displacement means being movable in a particular direction relative to the storage body to make a particular area in proximity to the vehicle dangerous to the personnel;

power means for moving the displacing means in the particular direction to displace the refuse from the hopper into the storage body;

transmission means disposed relative to the particular area for transmitting a signal across the particular area;

detection means disposed relative to the transmission means in a position to receive directly the transmitted signal, the detection means having characteristics for providing a particular electrical signal when the transmitted signal is not received by the detection means;

the power means being responsive to the particular electrical signal provided by the detection means to inhibit movement of the displacement means in the particular direction; whereby

the presence of the personnel in the particular area blocks the transmitted signal so that the detection means provides the particular signal to inhibit movement of the displacement means by the power means.

3,942,602

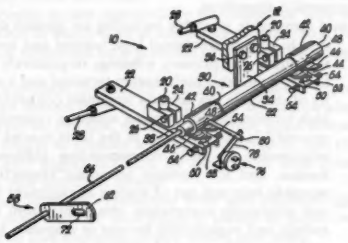
NEUTRAL SAFETY LOCK FOR HYDRAULIC IMPLEMENT CONTROLS

Cecil L. Case; Ferol S. Fell, and Merle K. Burkhart, all of Newton, Kans., assignors to Hesston Corporation, Hesston, Kans.

Division of Ser. No. 379,556, July 16, 1973, Pat. No. 3,857,298. This application May 29, 1974, Ser. No. 474,268

Int. Cl.² B62K *28/00*

U.S. Cl. 180—82 A **4 Claims**



1. In combination with a vehicle, a hydraulic steering, speed, and direction control comprising:

a pump body mounted on said vehicle and including a pair of variable displacement, fluid-regulating devices each having a shiftable actuating structure for increasing or decreasing the flow of fluid in either of two opposite directions,

each of said structures having an operated position corresponding to a neutral fluid flow condition in the corresponding device;

an operating element connected to each of said structures respectively adapting the latter for remote manipulation by the operator of the vehicle;

a lock assembly including first components on said structures and second components adjacent said structures for simultaneously and releasably holding both of said structures against operation by said elements; and

an operating linkage for said assembly rendering the latter remotely actuatable by the operator of the vehicle,

said structures, said first components, and said second components all being supported entirely by said pump body whereby to preclude accidental shifting of the components relative to one another during any relative movement between the pump body and the vehicle.

3,942,603

AUTOMATIC VEHICLE-STOPPING STRUCTURE

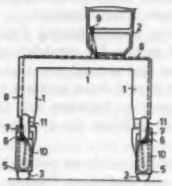
Tapio Pesonen, Tampere, Finland, assignor to Valmet Oy, Finland

Filed Dec. 4, 1974, Ser. No. 529,577

Claims priority, application Finland, Dec. 5, 1973, 3752/73

Int. Cl.² B60T *7/12*

U.S. Cl. 180—92 **3 Claims**



1. In a vehicle, a vehicle body having an outermost part which leads the remainder of the vehicle when the vehicle travels in a given direction, fluid-containing means carried by said outermost part of said vehicle body and projecting outwardly from the same so that said fluid-containing means will engage a person or object situated in the path of travel of the vehicle when the latter travels in said given direction, said fluid-containing means having at its region which is most distant from said outermost part of said vehicle body a flexible wall for engaging a person or object in said path of travel of the vehicle to be deformed by such a person or object for automatically changing the interior volume of said fluid-containing means, pressure-responsive electrical switch means communicating with the fluid of said fluid-containing means for responding to said change of volume when said flexible wall is deformed by engaging a person or object, and said pressure-responsive switch means when thus responding changing from one position to another position in an automatic manner, electrical brake-control means carried by the vehicle for controlling the brakes thereof, and electrical circuit means electrically connected between said electrical brake-control means and said pressure-responsive switch means for automatically actuating said brake-control means to engage brakes of the vehicle when said switch means moves from said one to said other position thereof in response to deformation of said flexible wall of said fluid-containing means by a person or object, said fluid-containing means including at least an elongated flexible tube which is closed at one end and which at its opposite end communicates with said pressure-responsive switch means, said tube being made of an elastic flexible material, and said fluid-containing means including an inner wall fixedly carried by said outermost part of the vehicle body, said tube engaging an outer surface of said inner wall which is directed away from said outermost part of said vehicle body, and an elastic membrane covering said tube at least partly at a portion thereof engaging said outer surface of said inner wall, said membrane having a peripheral region fixed to said inner wall and being stretched over said tube for forming said flexible wall which when deformed by a person or object will cause fluid in said tube to actuate said pressure-responsive switch means.

3,942,604

SAFETY SYSTEM FOR LAWN MOWERS OR OTHER VEHICLES

Charles E. Black III, Mount Prospect, Ill., assignor to Indak Manufacturing Corporation, Northbrook, Ill.

Filed Aug. 13, 1974, Ser. No. 497,087

Int. Cl.² B60K *26/00*

U.S. Cl. 180—103 R **9 Claims**

1. A safety system for a lawn mower or other vehicle,

comprising a traction drive system for selectively driving the vehicle along the surface of the ground,

said traction drive system including control means movable between a drive position in which said traction drive system is actuated and a neutral position in which said traction drive system is not actuated,

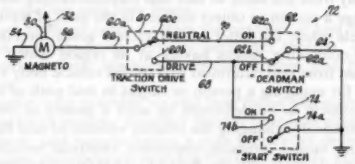
a traction drive switch operable by said traction drive system between a drive position when said traction drive system is actuated and a neutral position when said traction drive system is not actuated,

said traction drive switch having first, second and third terminals and means for establishing a connection between said first and second terminals when said traction drive switch is in said drive position while establishing an electrical connection between said first and third terminals when said traction drive switch is in said neutral position,

a deadman control movable on said vehicle between on and off positions and including biasing means biasing said control to said off position,

a deadman switch operable by said deadman control between an on position when said deadman control is in its on position and an off position when said deadman control is in its off position,

said deadman switch including first, second and third terminals and means for establishing a connection between



said first and second terminals when said deadman switch is in its off position while establishing a connection between said first and third terminals when said deadman switch is in its on position,

a drive motor on the vehicle and having a safety circuit for disabling said drive motor when said safety circuit is closed while enabling said drive motor when said safety circuit is open,

first circuit elements connecting said first terminals of said traction drive switch and said deadman switch to opposite sides of said safety circuit,

a second circuit element connected between said second terminals of said traction drive switch and said deadman switch,

and a third circuit element connected between said third terminals of said tractions drive switch and said deadman switch,

whereby said drive motor is disabled when said traction drive system is in said drive position while said deadman switch is in said off position,

said drive motor being disabled when said traction drive switch is in said neutral position while said deadman switch is in said on position,

said drive motor being enabled when said traction drive switch is in said neutral position while said deadman switch is in said off position.

3,942,605

ANTI-THEFT REMOVABLE IGNITION COIL INSTALLATIONS

Ernest Burnside, 3843 Rohns, Detroit, Mich. 48214

Filed Oct. 3, 1974, Ser. No. 511,684

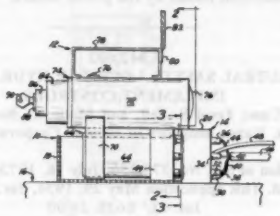
Int. Cl.² B60R *25/04*

U.S. Cl. 180—114 **10 Claims**

1. An anti-theft ignition coil installation for temporarily removing and carrying away the ignition coil and thereby temporarily inactivating the electrical ignition system of the internal combustion engine of a conventional automobile having a body with a driver's compartment therein, said installation comprising

a stationary assembly adapted to be mounted in the driver's compartment and including a receptacle having a wall with a stationary high tension terminal mounted in said wall and a multiplicity of stationary low-tension terminals stationarily mounted in said wall in insulated spaced relationship thereon and adapted to be permanently connected to the high tension and low tension circuits respectively of the electrical ignition system of the automobile engine,

and a completely removable assembly movable toward and away from said receptacle into and out of coupling en-



gagement with said stationary assembly and completely separable therefrom,

said removable assembly including an ignition coil structure having conventional high tension and low tension secondary and primary windings respectively and also having a movable high tension terminal and a multiplicity of movable low tension terminals connected to said high tension and low tension windings respectively and mounted in said structure in the same spaced insulated relationship as their corresponding stationary high tension and low tension terminals respectively and movable into and out of mating engagement therewith and selectively completely removable from the automobile and replaceable therein in response to moving said removable assembly into and out of coupling engagement with said stationary assembly.

3,942,606

METHOD OF LAND SEISMIC EXPLORATION USING FLEXIBLE TUBES

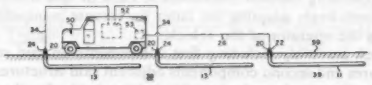
Charles W. Dick, Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.

Division of Ser. No. 376,644, July 5, 1973, Pat. No. 3,840,846.

This application July 8, 1974, Ser. No. 486,725

Int. Cl.² G01V *1/10, 1/16*

U.S. Cl. 181—122 **5 Claims**



5. A detector for detecting seismic pressure waves in the earth comprising:

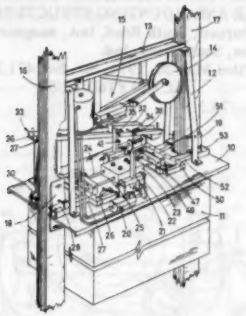
a flexible-walled, elongated tube filled with liquid, and a pressure responsive transducer connected to said tube and in communication with said liquid, the major portion of said liquid-filled tube being buried beneath the surface of the ground.

3,942,607

ELEVATOR SAFETY BRAKE

Dane Sobat, No. 1302, 808 - 5th St. SE, Calgary, Alberta, Canada

Filed Sept. 6, 1974, Ser. No. 503,933
Int. Cl.² B66B 5/22
U.S. Cl. 187—77 4 Claims



1. A braking device for an elevating apparatus operating within the walls of a shaft comprising in combination:

i. at least one wheel member rotatably mounted from said elevating apparatus against one of the walls of said shaft as said elevating device is moved upwardly or downwardly within said shaft;

ii. hydraulic means operated by movement of said wheel member to pump fluid at increasing pressure to a trigger device supported on a platform of said elevating apparatus;

iii. an explosion containing chamber having an explosive charge therein fixed to said elevating apparatus adapted to drive an ejection member therefrom upon release of said trigger to explode a charge contained by said chamber, said trigger actuated by increase of fluid pressure from said hydraulic means;

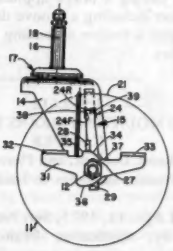
iv. brake members expandable from said platform against said shaft walls by said ejection means to arrest movement of said elevating device within said shaft.

3,942,608

CASTER BRAKE ASSEMBLY

Edward J. Frank, and John M. Freeman, both of Evansville, Ind., assignors to Bliss & Laughlin Industries Incorporated, Oak Brook, Ill.

Filed Nov. 8, 1974, Ser. No. 522,059
Int. Cl.² B60T 1/04
U.S. Cl. 188—1 D 6 Claims



1. In a caster assembly having a wheel, a horn, mounted to said wheel, and means mounted to said horn for pivotal attachment to an item to be supported by the caster assembly, the improvement comprising:

a brake shoe member having a wheel contactor shoe extending parallel to the rotational axis of the wheel and disposed radially outward from the wheel and movable inwardly to a position of engagement with the tread of the wheel to prevent wheel rotation;

said brake shoe member having a locator guidingly received on the horn and locating said shoe laterally with respect to the horn and locating said shoe at the correct index position with respect to the horn about a rotational axis of the wheel, said locator having an offset extending through a hole in a wall of said horn, said locator being slidingly engageable with said wall above and below said hole on the inside and outside of said wall respectively, to provide the lateral location of said shoe, and the front and rear edges of the hole providing guiding engagement with front and rear edges of the offset to maintain the correct index position of the shoe with respect to the horn, said wall of said horn being between said wheel and the portion of the locator below said hole whereby said wheel is centered between said wall and an opposite wall of said horn;

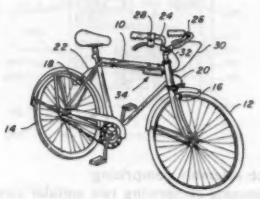
and shoe operating means associated with said horn and operable to alternately move said shoe to and from said engagement position.

3,942,609

SAFETY BRAKE FOR BICYCLES

Robert H. Hill, 5808 E. 64th St., Tulsa, Okla. 74136

Filed Apr. 14, 1975, Ser. No. 567,754
Int. Cl.² B62L 3/08
U.S. Cl. 188—24 5 Claims



1. A safety brake device for bicycles having a right brake lever with a right lever cable extending therefrom which is drawn towards the lever when the lever is actuated, a left brake lever having a left lever cable extending therefrom which is drawn towards the lever when the lever is actuated, a front brake having a front brake cable extending therefrom, the front brake being actuated when the front brake cable is drawn away from the brake, and a rear brake having a rear brake cable extending therefrom, the rear brake being actuated when the rear brake cable is drawn away from the brake, the device comprising:

a housing supported to the bicycle having said right and left lever cables and said front and rear brake cables communicating therewith;

a front brake actuator movably supported in said housing, said front brake cable being connected to said front brake actuator, said front brake actuator being movable between a first position in which said front brake is not applied and a second position wherein said front brake cable is withdrawn to apply said front brake;

a rear brake actuator movably supported in said housing, said rear brake cable being connected to said rear brake actuator, said rear brake actuator being movable between a first position in which said rear brake is not applied and a second position wherein said rear brake cable is withdrawn to apply said rear brake;

two pulleys being rotatably affixed to one of said front and rear brake actuators, said right lever cable looping around one of said pulleys and the end thereof being

affixed to the other of said actuators, and in like manner, the left lever cable being looped around the other pulley and attached to the other of said actuators; and

means biasing said rear brake cable in preference to said front brake cable whereby said rear brake cable will be withdrawn towards said housing first when either said right or left brake lever is applied.

3,942,610

SPREADING DISC BRAKE WITH REMOVABLE SHOES

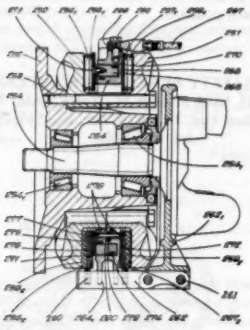
Hermann Klaue, Tour d'Ivoire 24 e, 1820 Montreux, Switzerland

Division of Ser. No. 288,287, Sept. 12, 1972, Pat. No. 3,885,650, which is a continuation-in-part of Ser. No. 73,566, Sept. 18, 1970, abandoned. This application Apr. 2, 1974, Ser. No. 457,261

Claims priority, application Germany, Dec. 2, 1969, 1960286; Dec. 27, 1969, 1965171; Dec. 27, 1969, 1965170

Int. Cl.² F16D *55/10*

U.S. Cl. 188—71.4 **7 Claims**



1. A brake assembly comprising:

a brake housing comprising two annular covers bolted together and to the hub of a wheel at their inner circumferences to be rotable therewith, said covers forming an annular gap therebetween open on its radially exterior side, the opposite inner sides of said two covers providing annular braking surfaces;

two pairs of semi-circular brake shoes disposed from the radially exterior side into said gap having friction linings facing the adjacent braking surfaces, each brake shoe having a shoulder with a flanked end, the shoulders of complementary brake shoes being oppositely disposed and the flank ends of said brake shoes providing abutments at one another, said flank ends being vertically situated to the line connecting the shoulders, each of said pairs of brake shoes being supported by two diametrically opposite disposed brackets extending over said annular gap and being pivotally mounted on a stationary carrier, said brake shoes being insertable into the gap from the radially exterior direction after removing the brackets and thereby uncovering said gap without dismantling the brake assembly;

brake shoes operating means separate from the brake shoes and disposed therebetweeen comprising a cooperating ring cylinder and ring piston, said cylinder and piston enclosing therebetween an annular space connected to a fluid conduit of a hydraulic system for extending said annular space, said ring cylinder being provided with two diametrically opposite disposed shoulders providing an abutment for said ring cylinder on said brackets, said annular space being sealed by sealing means comprising two sealing rings fitted in ring groves provided in the surfaces of the ring cylinder and the ring piston respectively, the operating means further comprising heat insulating rings attached to the ring cylinder and to the ring piston respectively and facing the opposite brake shoes, and means for automatic and infinitely, adjustment to cause a constant clearance between the brake shoes and the braking surfaces of the brake housing.

3,942,611

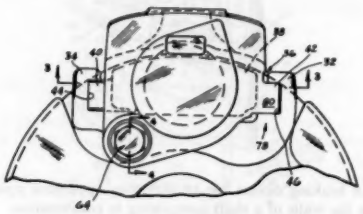
DISC BRAKE AND MOUNTING STRUCTURE THEREFOR

Richard T. Burnett, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed May 20, 1974, Ser. No. 471,266

Int. Cl.² F16D *65/04*

U.S. Cl. 188—73.3 **6 Claims**



1. In a disc brake, a rotor having a pair of friction faces, a pair of friction elements, one of said elements being disposed adjacent each of said friction faces, a member straddling said rotor and engaging each of said friction elements for urging each of the latter into braking engagement with their corresponding friction faces when a brake application is effected, a fixed support member disposed in a plane adjacent said rotor, one side of said support member facing said rotor, and means slidably mounting said straddling member on said support member for transverse movement with respect to said rotor, said slidably mounting means including pin means located radially inwardly of the periphery of said rotor and rigidly connected with said support member, said pin means projecting from the side of said support member opposite the side of the latter facing the disc, an opening in the other member receiving said pin means, said opening defining a bearing surface circumscribing the pin means, and a tongue-in-groove connection on the corresponding cooperating edges of said straddling member and on said support member to restrain rotation of said straddling member about said pin means, said fixed support having a pair of arms having facing surfaces defining a recess therebetween, said surfaces being disposed radially inwardly from the periphery of the rotor, one of said friction elements being located in said recess and having anchoring surfaces on opposite ends thereof cooperating with the facing surfaces of said arms to anchor said one friction element during a brake application, said tongue-in-groove connection including a groove defined on one of said facing surfaces and a tongue extending from one side of the straddling member.

3,942,612

FRICTION PAD MOUNTING MEANS FOR A DISC BRAKE CALIPER

Claude Le Marchand, Domont, and Pierre Courbot, Villiers-le-Bel, both of France, assignors to Societe Anonyme D.B.A., Paris, France

Filed Apr. 11, 1975, Ser. No. 567,222

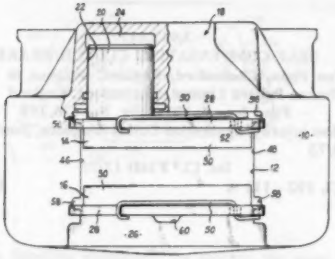
Claims priority, application France, Apr. 25, 1974, 74.14391

Int. Cl.² F16D *65/12*

U.S. Cl. 188—73.6 **4 Claims**

1. A disc brake comprising brake applying means associated with a carrying member, said brake applying means including

at least one piston having an idle position and cooperating with at least one brake pad, said pad comprising a backing plate to which a friction lining is fixed, said backing plate having a given thickness and circumferentially spaced ends defining a maximum circumferential length, said carrying member being provided with a substantially rectangular aperture defining a pair of circumferentially spaced edges, said pad being slidable by way of its circumferentially spaced ends on two series of surfaces, each series of surfaces being formed on one of said edges and comprising a usefull area with which is



adapted to cooperate one of said ends whatever the wear of the lining, wherein each edge of the aperture is further provided with at least one slot whose axial length is at least equal to the thickness of the backing plate and which is offset towards said piston relative to the corresponding usefull area of a given distance which is the same on each edge of the aperture, the corresponding slots in each edge of the aperture defining a circumferential length which is at least equal to said circumferential length of the backing plate, the piston being capable of moving away from the pad a distance from its idle position at least equal to said given distance.

3,942,613

HYDRODYNAMIC BRAKE, ESPECIALLY FOR MOTOR VEHICLES

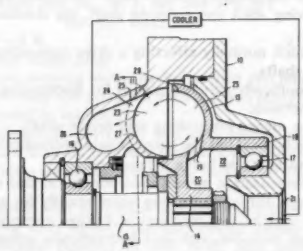
Eberhardt K. Frotschner, Gerlingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Aug. 7, 1970, Ser. No. 62,061

Claims priority, application Germany, Aug. 9, 1969, 1940739

Int. Cl.² F16D *57/02*

U.S. Cl. 188—296 **16 Claims**



1. A hydrodynamic brake for vehicles comprising: housing means, rotating blade wheel means operatively connectible to a rotating shaft to be braked, said rotating blade wheel means having a plurality of blade means attached thereto, stationary blade wheel means having a plurality of blade means attached thereto, said rotating wheel means and said stationary wheel means being disposed in said housing means with their respective blade means facing one another to form a working circulation space therebetween, the respective blade means of said stationary and rotating wheel means being so arranged that introduction of a liquid medium to the working circulation space causes effective transfer of braking forces from said stationary wheel means to said rotating wheel means due to relative rotation of the liquid between the respective blade means of the two wheels, inlet aperture means for introducing the liquid medium to the working circulation space, discharge aperture means for discharging the liquid medium from the working circulation space, and discharge channel means for conducting the liquid medium away from the discharge aperture means, said discharge aperture means extending through the stationary wheel means in a direction approximately parallel to the blade angle of the blade means on said stationary wheel means such that the liquid medium is discharged tangentially utilizing the dynamic pressure imparted to the liquid medium in the working circulation space, whereby the necessary brake deceleration forces can be carried out by the liquid medium and the heat developed in said liquid medium during the braking operation can be transferred away from the working circulation space, characterized in that said inlet aperture means includes at least one inlet aperture arranged in the rotating blade wheel within the inner area of the working circulation space, and in that the inlet aperture means terminates substantially tangentially into the working circulation space.

3,942,614

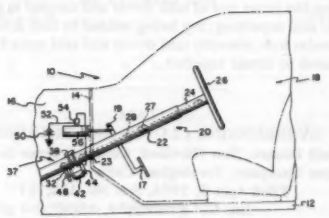
GEAR SELECTOR SAFETY LOCK

Owen L. Thompson, 303 Ellsworth, Saginaw, Mich. 48604

Filed June 24, 1974, Ser. No. 482,075

Int. Cl.² G05G *5/10*; F16D *67/00*

U.S. Cl. 192—4 A **9 Claims**



1. In combination:

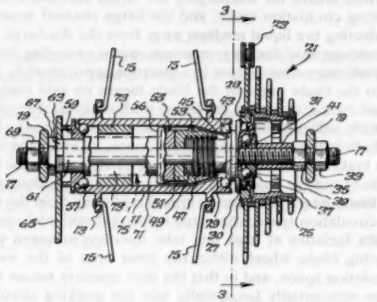
vehicle steering means including a steering column for steering a vehicle;

transmission gear selector means mounted on said steering column means for movement between a non-drive position and steering column means for movement between a non-drive position and a drive position;

fluid pressure operated brake means movable between a non-braking position and a braking position for selectively braking movement of said vehicle; and

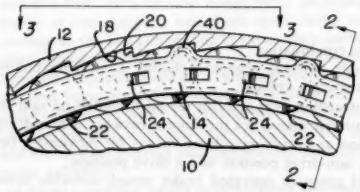
means responsive to said brake means being in said non-braking position for preventing movement of said gear selector means from said non-drive position to said drive position and responsive to a predetermined fluid pressure at which said brake means is operated as said brake means is moved in a direction from said non-braking position toward said braking position for permitting movement of said selector means.

3,942,615
MULTI-SPEED HUB WITH BRAKE
Dennis K. Craig, 8620 Pine Ave., Niagara Falls, N.Y. 14304
Continuation of Ser. No. 435,711, Jan. 23, 1974, abandoned.
This application Jan. 20, 1975, Ser. No. 542,356
Int. Cl.² F16D 23/00
U.S. Cl. 192—6 A 1 Claim



1. A multi-speed gear hub assembly with brake for a bicycle or the like which comprises: an axle carried by the frame of said bicycle and held against rotation; a driving wheel hub rotatably mounted on said axle; a clutch cone within said hub and movable longitudinally therein alternatively to engage said hub for causing said hub to rotate or to actuate braking mechanism which includes laterally movable brake shoes in said hub; a driver rotatably mounted directly on said axle and threadedly engaging said clutch cone, whereby to move said cone in a selected longitudinal direction upon rotation of said driver, said driver projecting axially from said hub; a sprocket cluster having a tubular hub wholly outside said first mentioned hub and rotatably mounted on said axle; and a mounting ring concentric with said driver and said tubular hub surrounding the outer end of said driver and carried in said tubular hub, said mounting ring being welded to said driver and to said tubular hub, whereby said driver and said sprocket cluster are caused to rotate together.

3,942,616
OVERRUNNING CLUTCH AND RETAINER
J. Russell Elmore, New Hartford, Conn., assignor to The Torrington Company, Torrington, Conn.
Filed Apr. 5, 1974, Ser. No. 458,111
Int. Cl.² F16D 3/34, 15/00
U.S. Cl. 192—45 22 Claims



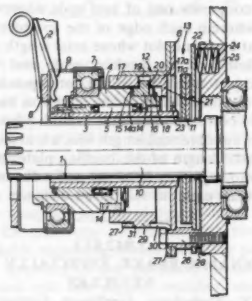
1. In a clutch with an inner member and an outer member of greater inside diameter than the outside diameter of the inner member thereby providing a space between said inner and outer members with one of said members having a cam surface and a plurality of adjacent rolling members in said space; the smallest circumferential space between the rollers being too small to allow springs to enter such smallest space and operate properly; a retainer comprising;

a first end plate and a second end plate, said end plates being positoned in the space between the inner and outer clutch members;

each end plate including a plurality of circumferentially spaced spring biasing members extending axially toward the other end plate, each spring biasing member extending into a circumferential space between adjacent rolling members larger than the smallest circumferential space between said adjacent rolling members; and

means for preventing relative rotation of the end plates with respect to the member having a cam surface.

3,942,617
SELF-COMPENSATING CLUTCH/BRAKE
Sui Yun Poon, Chelmsford, England, assignor to Ransome Hoffmann Pollard Limited, Chelmsford, England
Filed June 4, 1974, Ser. No. 476,259
Claims priority, application United Kingdom, June 4, 1973, 26603/73
Int. Cl.² F16D 13/75
U.S. Cl. 192—111 A 18 Claims



1. A hydraulically operated clutch mechanism for connecting a driving shaft and a driven shaft, the mechanism comprising:-

a. a clutch normally effecting a drive connection between said shafts;

b. hydraulically actuable means for disengaging said drive connection;

c. brake means for braking said driven shaft;

d. a mechanical linkage between said hydraulically actuable means and said brake means; and

e. a compensation means, incorporated in said mechanical linkage, for compensating automatically for any wear of said clutch; said mechanical linkage comprising a first sleeve movable with said hydraulically actuable means and a second sleeve engagable with said brake means, said first sleeve being connected to said second sleeve by said compensation means;

said compensation means comprising at least one slot formed in one of said sleeves and at least one peg provided on the other of said sleeves, there being as many pegs as there are slots and the peg(s) mating with slot(s); and actuation of said hydraulically actuable means first disengaging said drive connection and then causing braking of said driven shaft.

3,942,618

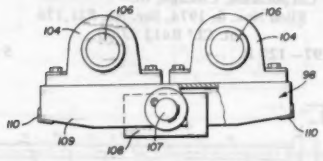
ROLLERWAY FOR HANDLING MOLDING APPARATUS

James W. Franklin, P.O. Box 3646, Albuquerque, N. Mex. 87110

Continuation-in-part of Ser. No. 214,699, Jan. 3, 1972, Pat. No. 3,826,057. This application Apr. 4, 1974, Ser. No. 457,740

Int. Cl.² B65G 13/12

U.S. Cl. 193—35 R 2 Claims



1. Form handling equipment for moving the large form sections that are used in connection with the pouring of concrete deck and roof structures wherein the form sections are unitarily inclusive of form supporting trusses disposed beneath the form sections and wherein the bottom chords of said trusses have an uninterrupted planar lower face comprising a first channel section having its flanges disposed upwardly for use in contact with a level building support surface at a building site, truss chord receiving means inclusive of a rotatably mounted roller for contact with the lower planar face of said truss chords, a second channel section as a support for said truss chord receiving means and the roller thereof, said second channel section having its flanges disposed downwardly in mated position with respect to said first channel section, and a pivot element having an axis aligned parallel to said building support surface and extending through the flanges of said channel sections to facilitate movement of said roller to tilted positions as the truss is moved.

3,942,619

PRINTER EMPLOYING STYLUS CORRELATION AND MOTOR DAMPING MEANS

Larry A. Nordstrom, Oveido, and Daniel J. Szechy, Sanford, both of Fla., assignors to Scope, Incorporated, Reston, Va.

Filed July 16, 1973, Ser. No. 379,241

Int. Cl.² B41J 1/60

U.S. Cl. 197—1 R 21 Claims

1. Apparatus comprising:

a multiphase stepping motor having at least two phases and adapted to step one phase for each position along a path;

a shaft rotated by said motor;

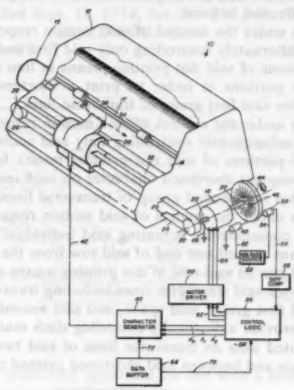
means mechanically driven by said shaft along a path;

circuit means coupled with said mechanically driven means for providing signals thereto during movement along said path;

means coupled with said shaft and said circuit means for correlating each signal from said circuit means with a predetermined position of said shaft, said correlating means including a disc fixed on said shaft and having a plurality of striations thereon for each phase of said stepping motor;

means for energizing a first phase of said motor during energization of a second phase of said motor, in order to brake said shaft; and

means for energizing said first phase only at a predetermined position of said shaft during energization of said second phase, said predetermined position energizing means including a control circuit coupled to an output of said correlating means for counting each striation of said disc and for energizing said first phase after counting a predetermined number of striations during energization of said second phase.



3,942,620

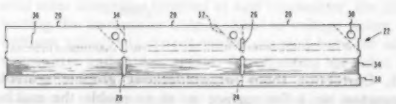
PRINTING MECHANISM

James Roland Dillinger; Robert Frederick Herald, both of Rochester, and Irving Lionel Miller, Pine Island, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 25, 1974, Ser. No. 491,968

Int. Cl.² B41J 3/04

U.S. Cl. 197—1 R 5 Claims



1. Printing mechanism comprising

a print head carrying a plurality of individual dot printing means; said individual dot printing means being disposed in a row having a first or end portion, a second or middle portion and a third or other end portion;

means for holding a record medium in close proximity to said dot printing means so that said dot printing means are active to print dots on the record medium when the dot printing means are actuated;

means for providing relative movement between said print head and record medium so that said plurality of individual dot printing means may print dots on a series of parallel lines extending longitudinally of said record medium;

motion responsive means driven in timed relationship with the relative movement between said record medium and said print head for controlling the printing by said dot printing means so that said dot printing means may print on spaced lines extending transversely across the record medium corresponding to said row of dot printing means;

means under the control of said motion responsive means for controlling all three of said row portions of said dot printing means so that said dot printing means of all three of said row portions are effective to print a pair of consecutive full-sized characters on said record medium on first and second groups of said transverse lines;

means under the control of said motion responsive means for providing a space between said two groups of transverse lines consisting of one or more of said transverse lines on which none of said individual dot printing means is effective to print;

means under the control of said motion responsive means for alternately controlling only said first and second row portions of said dot printing means in lieu of said three row portions in order to print a shortened character within said first group of transverse lines;

means under the control of said motion responsive means for subsequently controlling only said second and third row portions of said dot printing means for printing a subsequent shortened character on said record medium within said second group of transverse lines; and

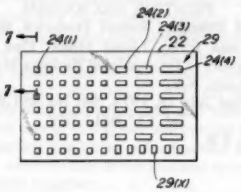
means under the control of said motion responsive means for consecutively actuating said individual dot printing means toward one end of said row from the other end of said row as said row of dot printing means consecutively crosses said transverse lines including transverse lines of said first group, said space, and said second group so as to provide a diagonally extending slash mark defined by printed dots on transverse lines of said two groups and space and between said shortened printed characters.

3,942,621

METHOD OF AND ARTICLE FOR MASKING

Mac Karlan, 1700 Grand Concourse, Bronx, N.Y. 10457

Filed Apr. 28, 1970, Ser. No. 32,574
Int. Cl.[2] B41J *29/16*
U.S. Cl. 197—181 **1 Claim**



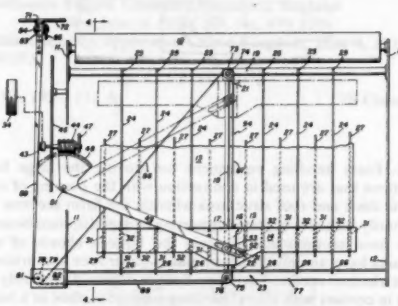
1. Correction sheet for obliterating graphic symbols or characters on a flat surface so as to enable the making of changes and corrections thereof comprising, in combination, a pellucid carrier sheet, an opaque film masking element of substantial dimensional extent in all directions so that said masking element is capable of obliterating any of a large number of graphic symbols and characters, said masking element comprising a color and texture similar to the color and texture of the flat surface so as to blend therewith and be substantially non-visible after transferral thereto, means for releasably securing said masking element on the rear face of said carrier sheet so as to enable said masking element to be easily visually and manually positioned by manual manipulation of said carrier sheet to overlie and cover the graphic symbol or character to be obliterated and means for adhering said masking element with said flat surface to enable manually induced transfer of said masking element as a coherent unit from said carrier sheet to said flat surface upon the application of pressure to the front surface of said carrier sheet, as by rubbing thereof with a stick-like object, so that said carrier sheet may be removed to leave said masking element permanently adhered on said flat surface, said correction sheet, particularly for obliterating typewritten material as for the correction of such material even after removal from a typewritter, having said masking element generally rectangular and configured to cover at least a generally rectangular area having a width and height equal, respectively, to the width and height allocated to spacing of a single typewritten character, and wherein said masking element is provided with a letter of contrasting color corresponding in shape and color to a typewritten character to enable obliteration of a typewritten error and correction thereof in a single operation even after removal of the material containing the error from a typewritter and without necessitating that the material be reinserted and re-positioned in a typewriter.

3,942,622

DOCUMENT STOP AND POSITION INDICATOR MECHANISM

James E. Blomquist, Riverton, Wyo., assignor to Victor Comptometer Corporation, Chicago, Ill.

Filed Nov. 6, 1974, Ser. No. 521,176
Int. Cl.[2] B41J *13/00*
U.S. Cl. 197—127 R **5 Claims**



1. In a business machine having a printer and a platen for backing a document during printing, a document stop and position indicator mechanism comprising: movable document stop means for supporting a document at a preselected printing position relative to the platen, means for guiding said document stop means, manually operable means for adjusting the printing position of a document supported by said stop means by moving the latter, a flexible band, band guide means for training said band past a viewing point, said band being calibrated to identify at said point the print-receiving portion of said document then disposed in printing position, said document stop means comprising an aperture and first and second blocks slidably disposed therewithin, each said end of said flexible band being secured to an associated said block, one of said blocks being adjustably secured to said document stop means, and means for interconnecting said blocks.

3,942,623

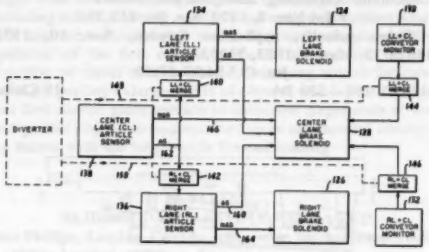
TRAFFIC CONTROLLER FOR MULTI-LANE CONVEYOR

Armistead S. Church, Midlothian; William H. Smick, III, and Walter W. Marsh, both of Richmond, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Nov. 27, 1974, Ser. No. 527,908
Int. Cl.[2] B65G *47/26*
U.S. Cl. 198—32 **11 Claims**

1. Article transport apparatus comprising: first and second conveyors, said second conveyor transporting articles to said first conveyor at a junction location therewith; first and second means for generating first and second output signals respectively on engaging articles on said first and second conveyors prior to conveyance thereof to said junction location and energizable by respective first and second control signals to arrest conveyance of such engaged articles; and control means receiving said first and second output signals for generating said first control signal upon occurrence of said second output signal and simultaneous non-occurrence of said first output signal, whereby said first means is energized to arrest articles on said first conveyor to prevent transport thereof to said junction location, and for generating said sec-

ond control signal when said first control signal is not generated, whereby said second means is energized to arrest articles


DIVERTER
LEFT LANE (LL) ARTICLE SENSOR
LEFT LANE BRAKE SOLENOID
LL + CL CONVEYOR MONITOR
CENTER LANE (CL) ARTICLE SENSOR
CENTER LANE BRAKE SOLENOID
RIGHT LANE (RL) ARTICLE SENSOR
RIGHT LANE BRAKE SOLENOID
RL + CL CONVEYOR MONITOR

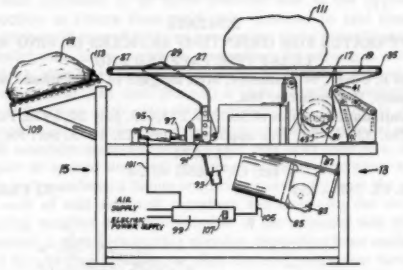
on said second conveyor to prevent transport thereof to said junction location.

3,942,624

CANTILEVERED BELTED BAG LOADING APPARATUS AND METHOD

Vytautas Kupcikevicius, Chicago, Ill., assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 29, 1973, Ser. No. 345,933
Int. Cl.² B65G 47/26
U.S. Cl. 198—37 **6 Claims**



1. Apparatus for conveying and supporting during bagging individual articles in a series of articles being continually bagged comprising, in combination;

an apparatus frame having a proximal end and a distal end;

a multiplicity of unconnectedly spaced apart parallel arrayed article conveyor means disposed substantially horizontally in alignment with the direction of article progression;

a multiplicity of spaced apart parallel arrayed article support means disposed substantially horizontally in alignment with the direction of article progression, each individually subtending one respectively of said multiplicity of conveyor means and each cantilevered towards the distal end of the frame from a fixed support adjacent the proximal end of the frame;

motive means operably connected to said conveyor means arranged to advance said conveyor means continuously from the proximal end towards the distal end of the apparatus frame; and

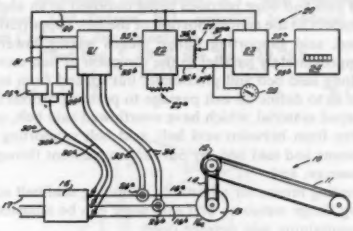
control means operably connected to and arranged and disposed to selectably continually activate said motive means.

3,942,625

PORTABLE CONVEYOR LOAD MEASURING APPARATUS

Edwin DeS. Snead, Box 798, Georgetown, Tex. 78626

Filed Sept. 13, 1974, Ser. No. 505,940
Int. Cl.² B65G 43/08
U.S. Cl. 198—37 **13 Claims**



1. Electric measuring apparatus for use with a lifting conveyor driven by an electric motor comprising

a solid state watt transducer; means for coupling said watt transducer to the power supply conductors of said motor, including means for feeding an input voltage to said watt transducer proportional to the motor supply voltage, and means for feeding an input current to said watt transducer proportional to the current drawn by said motor; said watt transducer producing an output voltage proportional to the motor power consumption;

a solid state transmitter coupled to the output of said watt transducer for amplifying the transducer output voltage; said transmitter including adjustment means for producing a zero output signal responsive to an input voltage of preselected value; said transmitter producing an output voltage proportional to the motor power consumption in excess of a selected power consumption to which the adjusted zero output voltage is responsive;

a solid state integrator coupled to said transmitter, for converting the transmitter output signal to voltage pulses of uniform value; adjustment means coupled between said transmitter and said integrator for adjusting the value of the input voltage to said integrator;

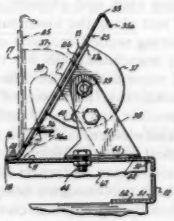
and counter means coupled to the output of said integrator for detecting and recording cumulatively the integrator output pulses.

3,942,626

CHANNEL BELT CONVEYOR

Edwin L. Wilding, Louisville, Ky., assignor to Griffin & Company, Louisville, Ky.

Filed Sept. 16, 1974, Ser. No. 506,231
Int. Cl.² B65G 15/08
U.S. Cl. 198—192 R **12 Claims**



1. A conveyor including:

an elongated belt having spaced parallel edge portions on opposite sides of a central belt portion,

a bed providing a surface slidably supporting at least a central portion of said belt for load-bearing movement therealong,

a plurality of elongated belt supporting flange means having respective belt engaging surfaces for slidably supporting the opposite edge portions of the belt above the bed, each of said belt edge portions being disposed at an angle with respect to the central portion of the belt supported by the bed, said supporting flange means having lower edges approximately parallel to the direction of belt movement along said bed and proximate, but spaced from said bed so as to define an exit passage to permit portions of conveyed material, which have overflowed said belt, to work free from between said belt, said belt supporting flange means and said bed, by outward movement through said passage, and

mounting means for adjustably mounting said belt supporting flange means so that said angle can be adjusted while maintaining said passage open.

3,942,627

LOAD CONVEYOR

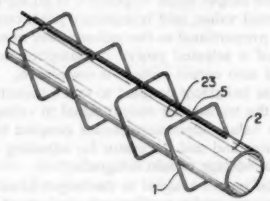
Jean Guigan, 9 rue Jean Mermoz, 75008 Paris, France

Filed Nov. 29, 1974, Ser. No. 528,567

Claims priority, application France, Dec. 13, 1973, 73.44557

Int. Cl.² B65G 25/04

U.S. Cl. 198—219 **8 Claims**



1. A load conveyor comprising a mat including first and second juxtaposed inflatable elements, said elements each having an upper supporting surface for a load and a lower surface resting on the mat, a plurality of members longitudinally spaced along each said element and having first ends attached to said mat along the lower surface of said element, said members having second movable ends opposite the first ends operatively associated with the respective element to undergo pivotal movement as the associated element is inflated and deflated, said members of each element being parallel to one another and initially inclined with the vertical when the associated element is deflated and undergoing tilting towards the vertical during inflation of said element to transport a load on said upper surface in the direction of tilting, said members of the two elements being inclined in opposite directions and undergoing opposite directions of tilting when their respective elements are inflated such that one element transports the load in one direction during inflation and the other element transports the load in the same direction during deflation.

3,942,628

TABLE FEEDER

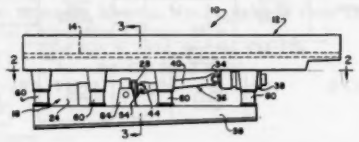
Alfons O. Falk, Smedjebacken, Sweden, assignor to Morgardshammar Aktiebolag, Smedjebacken, Sweden

Filed Nov. 8, 1973, Ser. No. 413,791

Claims priority, application Sweden, Nov. 10, 1972, 14623/72; Mar. 9, 1973, 7303338

Int. Cl.² B65G 27/00

U.S. Cl. 198—220 DA **18 Claims**



1. An apparatus comprising first reciprocatable material support means having a first support surface for supporting material, means for reciprocating said first support surface through forward and return strokes to move any material disposed on said first support surface, second reciprocatable material support means having a second support surface for receiving material from said first material support means, means for effecting movement of said second support surface through forward and return strokes with said first support surface and means for reciprocating said second support surface through up and down strokes extending transversely to said forward and return strokes at a rate which is a direct function of the rate of movement of said first support surface through forward and return strokes.

3,942,629

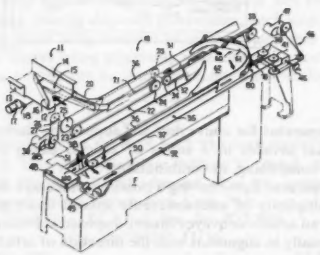
APPARATUS FOR ORIENTING ARTICLES HAVING AT LEAST ONE TAPERED END

Paul F. Cover, Westminster, Md., assignor to The United Company, Westminster, Md.

Continuation-in-part of Ser. No. 273,405, July 20, 1972, Pat. No. 3,874,498. This application Jan. 23, 1975, Ser. No. 543,624

Int. Cl.² B65G 47/24

U.S. Cl. 198—254 **32 Claims**



1. Apparatus for orienting elongated objects of random lengths each of which is normally tapered at one end and has a larger end remote from the tapered end comprising first means for conveying said objects randomly with different ends leading along a first generally horizontal path in a first direction, second means for conveying said objects along a second generally horizontal path in a second direction opposite and generally parallel to said first direction, means between said first and second conveying means for orienting said objects such that substantially all objects conveyed by said second conveying means have like contoured ends leading, said orienting means including means defining a first curved guide surface forming a transition path between said first and second

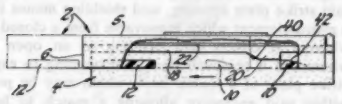
conveying means for contactingly guiding the tapered ends of objects to cause the larger ends of the thus guided objects to be deposited upon said second conveying means with the larger ends thereof leading, and said orienting means further including means defining a second curved guide surface adjacent said second conveying means disposed at least partially upstream of the first curved guide surface relative to the direction of travel of said second conveying means for contactingly guiding enlarged ends of objects which pass beyond said first curved guide surface to cause the larger ends of the thus guided objects to be deposited upon said second conveying means with the larger ends thereof leading.

3,942,630

SLIDING COVER SAFETY PACKAGE

Otto Phillips, London, Canada, assignor to International Tools (1973) Limited, Windsor, Canada

Filed Nov. 22, 1974, Ser. No. 526,186
Int. Cl.² B65D *43/20, 85/56*
U.S. Cl. 206—1.5 **5 Claims**



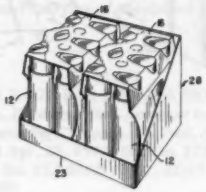
1. A sliding cover safety package comprising: a container having a cover mounted thereon for longitudinal slidable movement in one direction from a closed position with respect to said container to an open position, and in the opposite direction to return from said open position to said closed position; said cover having a base portion and a pair of spaced, parallel side skirt members depending therefrom; a cover locking element projecting inwardly from each side skirt member near one end thereof; a slide member projecting inwardly from each side skirt member near the other end thereof; said container having a pair of spaced, parallel side wall members received between said side skirt members, and a pair of spaced end wall members extending between said side wall members; a flange projecting outwardly from the end of each of said side wall members and overlying the cover locking member and slide member of the adjacent side skirt member; a container locking member depending from each of said flanges intermediate the ends thereof; said cover having a closed and locked position with respect to said container in which said base portion completely overlies the space enclosed by said side wall members and end wall members of said container and is spaced from said flanges in a fixed axial position with respect thereto, and in which said cover locking elements and slide members engage the underneath side of the respective flanges of said container with each of said container locking members being located in the path of a respective one of the cover locking elements to prevent sliding movement of the respective cover locking element along said flange in said one direction; cooperating stop elements on said container and cover preventing movement of said cover in said opposite direction with respect to said container when said cover is in the closed position; said cover having an unlocked position in which the space between said base portion and said flanges is reduced to displace said slide members and container locking elements from the underneath sides of the respective flanges with the container locking elements out of the path of movement of the respective cover locking elements to permit movement of said cover in said one direction with respect to said container; and a pair of spaced elongated spring members extending between said container and cover in parallel relationship with said side walls; each of said spring members being integrally formed on one of said cover and container and having a free edge slidably engaging the other of said cover and container to resiliently bias said base to said fixed axial position and hence said cover to said locked position to permit movement of said cover from said closed position only subsequent to deflection of said spring members by movement of said base toward said flanges from said fixed axial position.

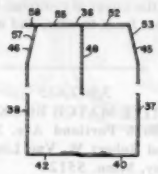
3,942,631

MULTI-UNIT PACKAGING METHOD AND PACKAGE

Robert L. Sutherland, Sloatsburg, N.Y., and Frederick E. Naumann, Old Tappan, N.J., assignors to Federal Paper Board Company, Inc., Montvale, N.J.

Filed Dec. 5, 1974, Ser. No. 529,703
Int. Cl.² B65D *5/54, 81/36*
U.S. Cl. 206—44.12 **6 Claims**





4. A package comprising an outer shipping container of generally tubular form with top and bottom closure flaps connecting the top and bottom edges of peripheral side walls, said side walls having tearing or cutting lines which enable the topmost portions of said container to be readily separated from the bottommost portions so as to leave an open tray and expose the contents, and one or more packages of product units in the form of bottles or cans enclosed in said shipping container, which packages comprise a group of said product units arranged in a row, or in a double row with the product units aligned in pairs transversely, and a wrapper of paperboard, or the like, enclosing said product units which wrapper provides a top wall, depending side walls and a side wall connecting bottom wall, said side walls having tear line formations therein spaced a relatively short distance from the bottom wall which resist tearing under normal lifting of the package by grasping the top wall but which enable the top portions of the wrapper to be torn away by exerting a predetermined upward pull on the top portions of said side wall panels while restraining the upward movement of the product units.

3,942,632

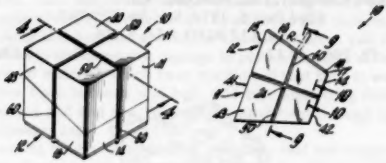
JEWELRY BOX

Robert S. Witkoff, Glen Cove, N.Y., assignor to The Alsten Company, Jersey City, N.J.

Filed Sept. 3, 1974, Ser. No. 502,505
Int. Cl.² B65D *25/24*
U.S. Cl. 206—45.2 **13 Claims**

11. A jewelry box comprising a case, a cover separably and removably mounted on the case, said case having a downwardly and forwardly slanting upper end, said cover having a forwardly and downwardly slanting underside, contacting the upper end of said case, said cover having a horizontal top, said case having a horizontal bottom, said case and cover having

coplanar front, rear and side walls, said case having a recess in its upper end, a pad in said recess, said pad having a slit to receive part of a piece of jewelry, said cover being hollow at its underside, said cover and case having frictionally interfitting means at the underside of the case and at the upper end of the cover, when the cover is removed from top of the case and turned 180° from front to rear, and applied to the underside of said case.

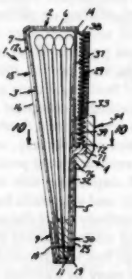


3,942,633

PROTECTIVE MATCH BOOK HOLDER

Gerald E. Blom, 8020 Portland Ave. South, Bloomington, Minn. 55420, and Robert W. Van Leuven, 12153 Geneva Way, Apple Valley, Minn. 55124

Filed Apr. 21, 1975, Ser. No. 569,864
Int. Cl.[2] A24F 27/04
U.S. Cl. 206—107 5 Claims



1. A holder for a book of matches of the type having a strike plate on the back panel, the holder being intended to prevent the removal of the match book from the holder or the striking by children of matches removed from the holder, and comprising:

a. an enclosure element for retaining a match book, said enclosure having a back panel, a top retention lip and a bottom retention lip; said top retention lip extending outwardly from the top edge of said back panel and thence downwardly toward said bottom retention lip, said bottom retention lip extending outwardly from the bottom edge of said back panel and thence upwardly toward said top retention lip, said two retention lips forcibly restraining a book of matches which may be inserted therebetween with a portion of the match book cover surface exposed to display advertising carried thereon and to allow the match book cover to be opened for match removal;

b. a first side panel connected to one end of said enclosure, said first side panel generally extending outwardly from said back panel between said top and bottom retention lips to restrict lateral movement of a book of matches which may be positioned beneath said retention lips;

c. a second side panel connected to a second end of said enclosure opposite said first side panel and generally extending outwardly from said back panel, said second side panel only partially enclosing the open end space bounded by said retention lips and said back panel to restrict free lateral movement of a generally full book of matches through said opening while allowing a book of matches to be forcibly inserted beneath said top and bottom retention lips by partial compression of the match book;

d. said back panel having a strike plate opening therein intended to be indexed with the strike plate carried by a book of matches which may be positioned in said enclosure;

e. finger-actuated shielding means for selectively covering said strike plate opening, said shielding means including a guard element which is movable from a closed position wherein it covers said opening to an open position wherein it is removed from said opening to expose the strike plate of a match book which may be positioned within said enclosure allowing a match to be struck thereon; and

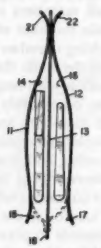
f. biasing means for forcibly biasing said guard element into its closed position to resist movement of said guard element from the closed position by the finger motion of a child.

3,942,634

TWO COMPARTMENT STERILANT PACKAGE

Robert A. Gandi, New York, N.Y.; Anthony P. Martino, and Robert G. Pellegrino, both of Wayne, N.J., assignors to Becton, Dickinson & Company, Rutherford, N.J.

Filed July 19, 1974, Ser. No. 490,021
Int. Cl.[2] A61L 13/00, 13/02; B65D 83/00
U.S. Cl. 206—210 9 Claims



1. A sterilant package for articles to be sterilized, comprising:

a first sheet of gas barrier material;

a second sheet of gas barrier material; and

a paper sheet, said paper sheet being treated with a material capable of releasing gaseous formaldehyde, said first sheet being sealed on three sides to a first face of the paper sheet to define a first sterilant compartment with a first opening for inserting a first article to be sterilized, said second sheet being sealed on three sides to a second face of the paper sheet to define a second compartment with a second opening for inserting a second article to be sterilized, said first and second sheets including a peelable seal coating for sealing a fourth side of each of said first and second sheets to the paper sheet to provide sealed

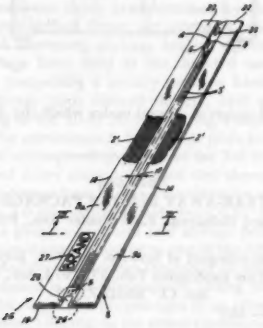
first and second compartments for the first and second sterilant articles.

3,942,635

SLIDE-FASTENER PACKAGE

Karlheinz Deneke, Kettwig, and Hans Paas, Neviges, both of Germany, assignors to Opti-Holding AG, Glarus, Switzerland

Division of Ser. No. 345,215, March 26, 1973, Pat. No. 3,913,297. This application Feb. 6, 1975, Ser. No. 547,585
Claims priority, application Germany, Aug. 18, 1972, 2240815; Aug. 25, 1972, 2241766
Int. Cl.² B65D *85/24*
U.S. Cl. 206—338 7 Claims



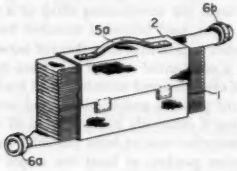
1. A package comprising a slide-fastener unit with juxtaposed coupling elements on respective stringer tapes and a slider engaging said coupling elements for alternately interlinking and separating same, and an envelope of flexible sheet material longitudinally folded about lateral outer edges of said stringer tapes, said envelope forming a substantially continuous rear wall and two front flaps separated by a longitudinal central gap exposing said coupling elements over their entire length and giving access to said slider.

3,942,636

PORTABLE FIRE-HOSE

Teruko Matsuyama, Kitakyushu; Tadao Nishida, Ashiya, and Toru Uraya, Kobe, all of Japan, assignors to Kanebo Ltd., Japan

Filed Mar. 8, 1973, Ser. No. 339,078
Claims priority, application Japan, Mar. 14, 1972, 47-31168[U]; Mar. 30, 1972, 47-38019[U]
Int. Cl.² B65D *71/00, 63/00, 85/54*
U.S. Cl. 206—349 5 Claims



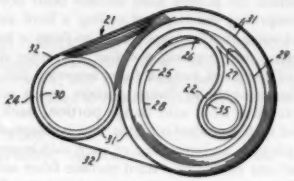
1. A portable fire hose comprising, in combination: a foldable textile fire hose having at each end thereof a hose coupling and foldable during nonuse into a folded condition; a flexible wrapping sheet member secured to an end portion of said fire hose and wrappable completely around said fire hose when in said folded condition such that said wrapping sheet member encircles a major portion of the folded hose with only the fold portions and hose couplings remaining unwrapped; fastening means for releasably fastening said wrapping sheet member around the folded fire hose to thereby maintain said fire hose in said folded condition; said fastening means comprising at least one velvet type fastner comprising a female element provided with a plurality of loops and a male element provided with a plurality of projections releasably engageable with said loops, said female element being secured to one end portion of said wrapping sheet member and said male element being secured to the other end portion of said wrapping sheet member such that said projections releasably engage with said loops to fasten said wrapping sheet member around the folded fire hose to thereby maintain said fire hose in said folded condition; and a handle secured to said wrapping sheet member to enable hand-carrying of the folded and wrapped fire hose.

3,942,637

PACKAGE FOR ENDLESS BELTS

Brian L. Glennie, Hastings, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Apr. 28, 1975, Ser. No. 571,908
Int. Cl.² B65D *85/02, 85/67*
U.S. Cl. 206—389 9 Claims



1. A package for endless belt, said package comprising a first hollow core having a slot extending axially in the wall thereof, a plurality of endless belts of the same length nested within each other and having one looped end of the nest of belts disposed within said first core with the remainder of the nest extending from said core through said slot and being wrapped around the outer peripheral surface of said first core,

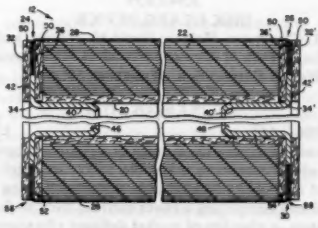
a second core disposed within the other end of said belts and contacting said other end, and means holding said other end to said wrapped portion of said belts on said first core.

3,942,638

CAP ASSEMBLAGE FOR HARD SURFACE FLOOR COVERING ROLL AND METHOD FOR MAKING SAME

Harris E. Stone, 293 Lenox St., Norwood, Mass. 02068

Filed Mar. 14, 1975, Ser. No. 558,339
Int. Cl.² B65B *61/00;* B65D *85/66;* B65H *17/02*
U.S. Cl. 206—416 10 Claims



1. A cap assemblage for a hard surface floor covering roll constituting a hard surface floor covering convoluted about a

paper core and an overwrap enveloped about the convoluted hard surface floor covering, said cap assemblage comprising:

a. a pair of disks, one of said disks being an inner disk and the other of said disks being an outer disk, each said disk formed with a central opening, each said disk having inner and outer faces;

b. a collar including an annular flange portion and a tubular neck portion, said flange portion having inner and outer faces and inner and outer circular peripheries, said neck portion extending from the inner periphery of said flange portion, said neck portion being received within said inner disk central opening and within said paper core, the diametral profile of said outer periphery of said flange portion being larger than the diametral profile of said inner disk central opening and the diametral profile of said outer disk central opening;

c. said cap assemblage said fitted to said hard surface floor covering roll, said inner face of said inner disk abutting against an edge of the convoluted floor covering, said neck portion being received within said inner disk central opening and within the paper core, said inner face of said flange portion abutting against said outer face of said inner disk, said inner face of said outer disk abutting against said outer face of said flange portion, and the said overwrap being sandwiched between said outer face of said inner disk and said inner face of said outer disk.

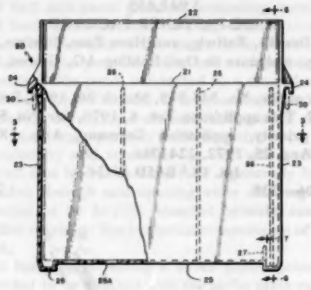
8. A method for storing hard surface floor covering, said method comprising the steps of coiling a hard surface floor covering about a tubular paper core to form a hard surface floor covering roll, pressing a collar and inner disk against each end of the hard surface floor covering roll, each said collar having an annular flange portion and a tubular neck portion extending from said flange portion, each said inner disk formed with a central opening that is adapted to receive said neck portion, an inner face of each said inner disk abutting against one end of said hard surface floor covering roll, each said flange portion abutting against an outer face of each said inner disk, each said neck portion received within the central opening of its associated disk and within the tubular paper core, applying an adhesive to the exposed outer face of each said inner disk, wrapping a sheet about said hard surface floor covering roll, crimping the ends of said sheet about the exposed outer faces of each said inner disk having said adhesive applied thereto, applying said adhesive to the exposed crimped regions of said sheet, and pressing an outer disk against each said crimped region of said sheet having said adhesive applied thereto, an inner face of each said outer disk abutting against the outer face of one of said flange portions, said adhesive holding said inner disks and said outer disks in fixed relationship, said central openings being coaxial with a longitudinal axis of said paper core.

3,942,639
DISK GUARD DEVICE

Bernard T. Cournoyer, Holden; David M. Wright, and Jerome M. O'Toole, both of Shrewsbury, all of Mass., assignors to Barry Wright Corporation, Watertown, Mass.

Filed Apr. 7, 1975, Ser. No. 565,939
Int. Cl.² B65D *85/30*
U.S. Cl. 206—444 **17 Claims**

1. A guard device for the storage of a flexible magnetic disk package which comprises a flexible jacket in which there is positioned a flexible magnetic disk, said device being substantially rigid and comprising a cover surface, back surface, sides and a bottom, a plurality of pocket defining ribs supported by one of said surfaces and extending inwardly towards the other of said surfaces to provide a pocket for said disk package, and restraining means positioned adjacent the bottom and supported by one of said surfaces to urge the jacket of said package towards the other of said surfaces, said restraining means

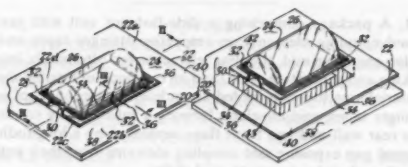


engaging said jacket at a point under which the disk does not lie.

3,942,640
TEAR-AWAY BLISTER PACKAGE

Harold Richard Hellstrom, 5245 Center Ave., Pittsburgh, Pa. 15232

Continuation-in-part of Ser. No. 269,752, July 7, 1972, abandoned. This application Feb. 27, 1974, Ser. No. 446,428
Int. Cl.² B65D *73/00*
U.S. Cl. 206—469 **36 Claims**



1. A quick-open blister package comprising a base member having at least one layer, a blistered containment member peripherally secured to said base member, the material of said base member layer being internally frangible in directions parallel to sides of said layer, a series of inner score lines in said base member and extending at least partially about said blistered member and closely adjacent an outer periphery of a pocket thereof, a series of outer score lines in said base member spaced outwardly of said inner series and extending closely and at least partially about the blistered member outer periphery, said inner score lines and said outer score lines excepting any portion of said outer score lines at an edge of said base member layer being cut into a nearer side of said base member layer but terminating short of a far side of said base member layer, said blistered member being secured to said base member within that area thereof between said series of score lines, a substantial area of said base member extending laterally of said blistered member in at least one direction thereof for front printing and the like, said score lines essentially delineating a relatively narrow band of securance area on said base member and at least partially surrounding said blistered member pocket, at least the major proportions of said inner and said outer score lines respectively coextending about said blistered member for this purpose, and means for securing said blistered member to said base member at said securance area band, whereby on opening said package said blistered member and said securance area band can be displaced from said base member by tearing taking place entirely within said base member layer but only between said score lines.

3,942,641

DISPENSING PACKAGES CONTAINING NOVEL CYCLIC PROGESTOGEN-INTERRUPTED ESTROGEN ORAL CONTRACEPTIVE REGIMENS

Eugene J. Segre, Los Altos, Calif., assignor to Syntex Corporation, Panama, Panama

Division of Ser. No. 250,785, May 5, 1972, which is a continuation-in-part of Ser. No. 247,012, April 24, 1972, abandoned. This application Mar. 24, 1975, Ser. No. 561,445

Int. Cl.² A61K *37/24*; A61J *1/00*

U.S. Cl. 206—534 17 Claims

1. In combination, a dispensing package having cyclic progestogen-interrupted estrogen oral contraceptives in unit dosage forms therein, said unit dosage forms being adapted for oral administration of one unit dosage form daily in a predetermined sequence during a 28 day medication administration cycle, said sequence being predetermined by the manner in which said unit dosage forms are stored in said dispensing package, said dispensing package bearing directions to take one unit dosage form daily in the directed sequence; said combination comprising a unitary member having 20 to 28 individual storage pods formed therein, said storage pods corresponding to the 20 to 28 days during which unit dosage forms are to be administered, the storage pods beginning with a storage pod corresponding to one of the 3rd to 6th days of said cycle and every second or third day thereafter having therein a unit dosage form having a combination of about 0.01 mg. to about 2.0 mg. estrogen and about 0.03 mg. to about 10.0 mg. of a progestogen, and said storage pods beginning with a storage pod corresponding to one of the 4th to 7th days of said cycle and every other day thereafter on which a combination formulation is not adminstered having therein a unit dosage form having only a progestogen in an amount of about 0.03 mg. to about 10.0 mg. as the active contraceptive component, said package containing progestogen-containing unit dosage forms for administration during a period of 20 to 23 consecutive days during said 28 day cycle; and retaining means adapted to maintain each unit dosage form in its individual storage pod until it is desired to dispense the unit dosage form therefrom, the amounts of said estrogen and progestogen in said unit dosage forms being effective to control the fertility of an otherwise fertile woman.

3,942,642

CARD RETRIEVAL SYSTEM

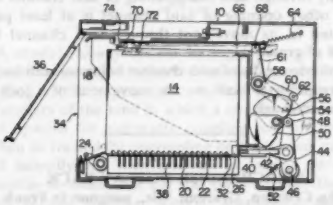
Nobuyuki Yanagawa, Tokyo, Japan, assignor to Ricoh Company Ltd., Tokyo, Japan

Filed Aug. 21, 1974, Ser. No. 499,237

Claims priority, application Japan, Oct. 22, 1973, 48-118743

Int. Cl.² B07C *3/18*; G06K *21/00*

U.S. Cl. 209—74 R 7 Claims



1. In a system for retrieving a selected one of a plurality of coded sheets, the system having a horizontal platen on which the sheets are vertically disposed in a storage position, the sheets having coded bottom edges contacting the platen, selector means provided to the platen to engage with the coded bottom edges of the sheets so that horizontal movement of only the selected sheet from said storage position to an intermediate position is possible when said selector means is actuated, biasing means to urge the sheets from said storage position towards said intermediate position, and actuating means operative to actuate said selector and biasing means, the improvement comprising:

hook portions formed on the upper edges of the sheets; and

an engaging member movable by said actuating means;

said actuating means being operative to sequentially actuate said selector means and said biasing means to move only the selected sheet from said storage position to said intermediate position and thereafter move said engaging member in a combined vertical and horizontal direction to engage with the hook portion of the selected sheet and lift and move the selected sheet to a retrieval position, said engaging member being arranged to engage with the hook portion of only the selected sheet in said intermediate portion and to clear the hook portions of the other sheets during the combined vertical and horizontal movement, and said biasing means being operative to move the selected sheet in one horizontal direction parallel to the horizontal edges of the sheets, and the horizontal component of the combined vertical and horizontal direction in which said engaging member is moved by said actuating means is opposite to the one horizontal direction.

3,942,643

SUPERCONDUCTING MAGNETIC SEPARATOR

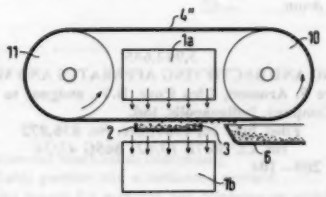
Herbert Auinger, Nurnberg; Franz Bohm, Grossgrundlach; Helmut Kuckuck, and Hans Voigt, both of Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 6, 1974, Ser. No. 440,048

Claims priority, application Germany, Feb. 14, 1973, 2307273

Int. Cl.² B03C *1/14*, *1/22*

U.S. Cl. 209—81 A 16 Claims



1. A continuously operating superconducting magnetic separator in which a mixture of particles of different magnetic susceptibility is led through the field of a stationary superconducting magnet arrangement and subjected to the influence of the product of the induction B and its local field gradient grad B, and in which particles of a given susceptibility are continuously separated magnetically from the mixture by means of a carrier running through the magnetic field and are removed from the carrier outside of the influence of the magnetic field wherein the improvement comprises:

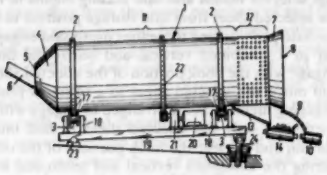
a. a magnet arrangement generating a magnetic field of large volume which penetrates the mixture moving past the field; and

b. a carrier including at least one planar integral ferromagnetic grid generating a field gradient.

3,942,644
APPARATUS FOR COOLING CASTINGS AND FOR COOLING AND DRYING MOULDING SAND

Herbert Vissers, Nieuw-Vennep, Netherlands, assignor to Expert N.V., Willemstad, Netherlands Antilles

Filed Sept. 27, 1973, Ser. No. 401,282
Int. Cl.² B07B 1/15
U.S. Cl. 209—86 8 Claims

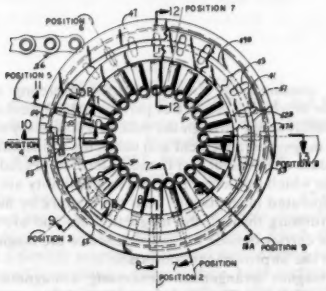


1. An apparatus for cooling castings while cooling and drying molding sand, comprising in combination:
an elongate, generally horizontal drum having an inlet end and an open discharge end defining a casting discharge mouth;
wall means at said inlet end for defining a restricted opening centered with respect to the axis of the drum, and means for feeding the molding sand and casting contents of molding flasks into said drum through said restricted opening;
said drum including an imperforate section leading from said wall means to adjacent the discharge end of said drum and including at least a terminal region nearest said discharge end which is of frusto-conical section which narrows toward said discharge end;
said drum also having a perforate section leading from said frusto-conical terminal region of the imperforate section, whereby to discharge sand from said drum before reaching said discharge end of the drum; and
means for selectively elevating the discharge end of the drum relative to its inlet end whereby to alter the inclination of said frusto-conical terminal region and thereby alter the residence time of the material passing through the drum.

3,942,645
FEEDING AND RECTIFYING APPARATUS AND METHOD

Theodore F. Aronson, Glen Cove, N.Y., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed June 26, 1969, Ser. No. 836,872
Int. Cl.² B07B 13/02; B65G 47/24
U.S. Cl. 209—104 2 Claims

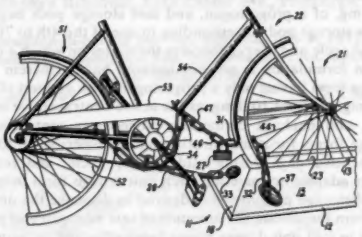


1. A feeder for successively feeding an article of manufacture to a moving carrier comprising:
hopper means adapted to receive a supply of said articles,
means cooperatively associated with said hopper means defining a discharge through which articles are successively dispensed from said hopper means,
means for effecting relative rotation between hopper means and said discharge means,
and means for orienting said articles as they are successively dispensed from said discharge means so that said articles are similarly presented to the moving carrier,
said orienting means comprising
means defining a chamber, and
a gaging means having a gaging slot disposed within said chamber, said chamber and gaging means being mounted for rotation whereby said article is directed through said slot to the carrier,
and including means for purging said orienting means of any defective article.

3,942,646
BICYCLE STAND

Edgar L. Nelson, Sacramento, and James R. Espinola, Carmichael, both of Calif., assignors to A. Teichert & Son, Inc., Sacramento, Calif.

Filed Mar. 7, 1975, Ser. No. 556,296
Int. Cl.² E05B 73/00, 71/00
U.S. Cl. 211—5 5 Claims



1. A bicycle stand comprising:
a. an elongated block of concrete having a bottom, a top, a forward end and an after end, and two sides, said top having formed therein an elongated recess capable of snugly receiving and maintaining a bicycle wheel in upright attitude;
b. a locking channel formed in said block, said channel extending from one opening located on the surface of said after end to another opening located on the surface of one of said sides, said locking channel being inclined at a predetermined slope so that a lock chain inserted downwardly through said one opening of said channel toward said other opening of said channel is at least partially assisted in its movement through said channel by the force of gravity,
the interior walls of said channel being smooth and uninterrupted to facilitate the movement of a lock chain therethrough.

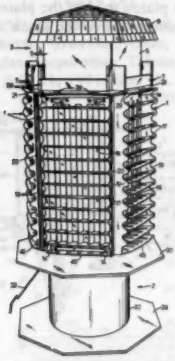
3,942,647
MERCHANDISE DISPLAY RACK

Louis John Crosslen, Grafton, Wis., assignor to Frank Mayer & Associates, Inc., Grafton, Wis.

Filed Mar. 17, 1975, Ser. No. 558,642
Int. Cl.² A47F 5/02
U.S. Cl. 211—144 7 Claims

1. In a multi-sided merchandise display rack the combination comprising: a central vertically disposed post, a plurality of spiders mounted on said post in vertically spaced relationship to one another, each of said spiders having a hub received on said central post and having means for attachment thereto,

a plurality of radially extending arms connected to said hub in circumferentially spaced relation therefrom, the outer end of each arm having a pair of mounting surfaces, said surfaces arranged at an angle to one another, said mounting surfaces each being coplanar with and spaced from an adjacent mounting surface of an adjacent arm and said surfaces of said vertically spaced spiders being respectively vertically aligned, a plurality of vertically positioned display shelf units mounted on said spaced coplanar mounting surfaces of adjacent arms and means for detachably connecting said display shelf units to said surfaces.

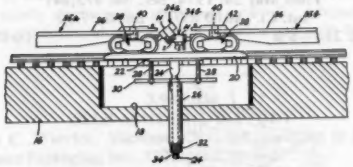


3,942,648

MODEL RAILWAY SYSTEM PROVIDING UNCOUPLING AND DELAYED RECOUPLING

Clarence K. Edwards, 1017 Black Oak Drive, and Lawrence D. Edwards, 2816 Rosemont Ave., both of Medford, Oreg. 97501

Filed May 9, 1975, Ser. No. 576,098
Int. Cl.² B61G 7/04
U.S. Cl. 213—75 TC **8 Claims**



1. A model railway system having track rails for rolling stock, which system provides for uncoupling, and for delayed recoupling, of the supported cars, said cars being equipped with couplers of the kind in which a coupler can normally be rocked upward for automatic coupling and for uncoupling, and when so rocked for uncoupling both couplers can then be rocked laterally and then allowed to assume an abnormal relationship in which one car can push another through the laterally rocked couplers without recoupling, said system comprising

a. coupler carried magnets affixed to the respective couplers of a pair of coupled cars, said magnets having lower poles of the same polarity, which poles are disposed to travel in distinct, substantially separated paths, parallel to the track rails and to one another,

b. an uncoupling station in the trackway which includes a normally ineffective coupler lifting magnet, which magnet is so located that, when rendered effective, it lifts a single coupler to an uncoupled position by magnetic repulsion, said coupler lifting magnet having an elongated pole of the same polarity as the lower poles of the coupler carried magnets, and

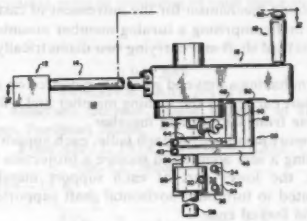
c. additional, side magnetic means at the uncoupling station at opposite sides of the coupler carried magnets, and each having active poles of opposite sign to the lower poles of the coupler carried magnets for deflecting the respective couplers laterally by magnetic attraction to a relationship in which the coupler of a locomotive-connected car can push the other coupler and the car on which said other coupler is carried, without recoupling, to any desired parking position, and can then leave it there while being individually withdrawn.

3,942,649

TRANSFER MECHANISM

Rodney Dale Hugelman, 700 W. Chrysler, Lot 329, Belvidere, Ill. 61018; Raymond Anton Kucharchuk, 2228 W. Hart Road, Rt. 5, Beloit, Ill. 53511, and Charles L. Goss, 2920 Imperial Oaks Drive, Rockford, Ill. 61111

Filed Oct. 29, 1973, Ser. No. 410,615
Int. Cl. B66c 1/02
U.S. Cl. 214—1 BH **17 Claims**



1. A transfer mechanism comprising:

a movable portion and a stationary portion;

gripping means for grasping and releasing an article;

transfer means for moving said movable portion with respect to said fixed portion, whereby an article carried in said gripping means is moved from location to location;

automatic control means for controlling said transfer means to move said movable portion automatically from place to place;

manual control means for moving said movable portion from place to place;

switch means for selecting one of said automatic and manual means for moving said movable portion from place to place;

biasing means for biasing said control means to said manual mode of operation;

said automatic control system being a fluidic logic system;

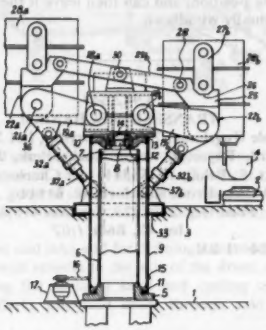
said fluidic logic system including sensing means for sensing the position of said movable portion; and

said biasing means including means for switching said control means to a manual mode of operation when power is restored after an accidental interruption of power.

3,942,650
TURNING MECHANISM FOR THE MOVEMENT OF LADLES IN STEEL MILLS

Pierre Peytavin, Neuilly-sur-Seine, France, assignor to Societe Anonyme dite: VALLOUREC (Usines a tubes de Lorraine-Escaut et Vallourec Beunies, Paris, France

Filed June 24, 1974, Ser. No. 482,638
Claims priority, application France, June 26, 1973, 73.23253; June 11, 1974, 74.20103
Int. Cl.[2] B66C 1/44
U.S. Cl. 214—1 BC 9 Claims



1. A turning mechanism for the movement of casting ladles in a steel mill comprising a turning member mounted to turn about a vertical shaft and carrying two diametrically opposite arms,

each arm having a first end rotatably mounted on a horizontal shaft carried by the turning member and a forked end remote from said turning member,

two support members for each ladle, each support member defining a seat adapted to receive a projection from said ladle, the lower part of each support member being mounted to turn on a horizontal shaft supported by one of said forked ends,

a rod associated with each support member, one end of each rod being pivotally connected to said turning member for rotation about a horizontal axis and the other end of each rod being pivotally connected to the support member with which it is associated, whereby said turning member combines with said arms, rods and support members to form parallelogram linkages maintaining said individual support members in a generally vertical position during swinging movement of said arms, and

fluid-pressure operated jacks connected between said turning member and said arms to swing said arms.

3,942,651
BALED HAY STACK FORMING APPARATUS

Allan B. Neely, Jr., 12991 E. Nevada, Aurora, Colo. 80012

Filed July 27, 1972, Ser. No. 275,479
Int. Cl. B65g 57/28
U.S. Cl. 214—6 B 12 Claims

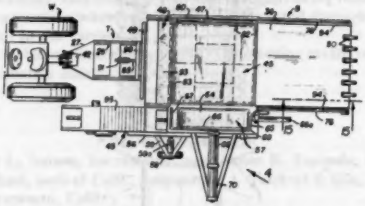
1. A bale collecting and stack forming apparatus adapted to be mounted upon a vehicle and comprising, in combination therewith:

a longitudinally extended stack bed having its rear section pivotally mounted upon the rear end of the vehicle to tip from a flat initial position upon the body of the vehicle to an upright position behind the vehicle, whereby to lift a bale stack lying on its side upon the stack bed to an upright position behind the truck for discharge of the stack therefrom;

a tipping means to tip the bed from a flat position to an upright position when a bale stack, lying on its side, is on the stack bed;

a shiftable platen normally positioned above the stack bed and above a bale stack formed upon the bed to receive bales arranged as a bale stack layer;

a platen shifting means operable after a bale stack layer is received on the platen to shift the platen from the aforesaid normal position above the stack to a substantially



vertical position near the front end of the stack bed and to then drop the bale stack layer upon its edge on the forward end of the stack bed and to thereafter return the platen to its aforesaid normal position;

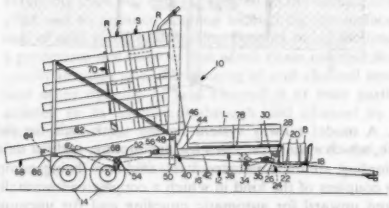
a layer shifting means to shift a bale stack layer dropped onto the stack bed towards the rear of the stack bed whereby the bale stack layer may become part of a bale stack lying upon the stack bed; and,

means for dispensing bales onto the platen and arranging the bales in the form of a stack layer.

3,942,652
METHOD AND APPARATUS FOR FORMING A PAIR OF TWO AND ONE-HALF BALE WIDE TIER PATTERNS

L. Dennis Butler, Kingsburg, and Thomas H. Wadsworth, Selma, both of Calif., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed May 24, 1974, Ser. No. 473,241
Int. Cl.[2] A01D 87/12; B65G 57/32
U.S. Cl. 214—6 B 16 Claims



1. A method of forming bales on a table of a bale wagon into a tier pattern being approximately two and one-half bales wide, comprising the steps of:

disposing one pair of bales, being arranged end-to-end in a row, onto an elongated platform of a length and width adapted to support said pair of bales and being movably mounted to said table and maintained at a first position on said table;

moving said platform with said on pair of bales being supported thereon to a second position on said table being generally perpendicular to said first position; and

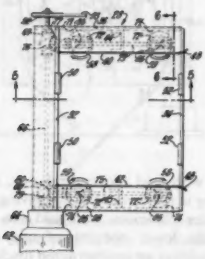
successively disposing a plurality of like pairs of bales onto said table in transverse relationship along one longitudinally-extending side, and generally between opposite ends, of said one pair being supported on said platform at said second position.

3,942,653

METHOD AND APPARATUS FOR PROCESSING

William B. Hullhorst, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed July 27, 1971, Ser. No. 166,532
Int. Cl.² B65G *59/00*
U.S. Cl. 214—8.5 K **1 Claim**



1. Apparatus for processing bodies of a stack of bodies, in combination, guide means for maintaining a plurality of the bodies in vertical stacked relation, pairs of rotatable cams supporting the stack of bodies, said cams being rotatable about vertical axes and having uninterrupted helically configurated surfaces for separating bodies from the stack, one pair of cams having right-hand helical configurations, the other pair of cams having left-hand helical configurations, the pairs of cams having helical configurations of opposed directions being rotated in directions to maintain a body being separated from the stack in a horizontal position, a drive shaft, motive means for rotating the drive shaft, power transmission means associated with the drive shaft for rotating the pairs of cams in opposite directions whereby a lowermost body is discharged from the rotating cams while a succeeding body is being separated by the cams from the stack, support means receiving the successively discharged bodies, and means for advancing the discharged bodies along the support means and away from the stack.

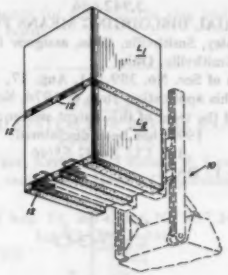
3,942,654

SELF-ADHERING SUPPORT

Philip C. Warrick, Michigan City, Ind., assignor to Performance Packaging, Inc., Michigan City, Ind.

Filed Mar. 22, 1974, Ser. No. 453,986
Int. Cl.² B65G *1/14*
U.S. Cl. 214—10.5 R **1 Claim**

1. In combination, a load unit having generally flat top and bottom surfaces and adapted to be lifted and transported by load handling means, such as a fork lift truck, and capable of vertical stacking with similar load units, and a plurality of supporting and spacing members attached directly to the bottom surface only of said load unit in a spaced pattern to support the load unit from a supporting surface and support an upper load unit from a lower load unit when stacked vertically to enable insertion of the forks of a fork lift truck between the members and under the bottom surface of the load unit for direct contact therewith for lifting and transporting the load unit, each supporting and spacing member including an elongated block of rigid material having a lateral dimension substantially less than the lateral dimension of the bottom surface of the load unit and including parallel opposed top and bottom surfaces, and a continuous coating of adhesive material on the top surface for self-adhering the member permanently to the flat bottom surface of the load unit, said block of material being constructed of lightweight rigid foam plastic material capable of being cut to desired dimensional characteristics prior to installation and being substantially non-absorbent for retaining its strength characteristics when exposed to contact with water or moisture, each block being rectangular and having end edges substantially coinciding with



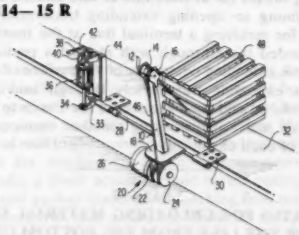
opposed edges of the bottom surface of the load unit to which it is attached thereby forming projections on only the bottom surface of the load unit to which the supporting and spacing members are mounted, said adhesive material being a pressure-sensitive, hot-melt adhesive formulated from solid derivatives, and a strippable protective sheet for protecting the adhesive coating prior to mounting of each block on the load unit.

3,942,655

LOBSTER TRAP DAVIT

Halvor L. Andersen, Gorham, Maine, assignor to The Harris Company, Portland, Maine

Filed Apr. 2, 1974, Ser. No. 457,393
Int. Cl.² B63B *27/20*
U.S. Cl. 214—15 R **5 Claims**



1. A pivotable davit for hauling a load from water onto a gunwale of a boat comprising

a. a hoist arm having a tip end and a base end, said tip end being adapted to receive a hoist line;

b. a perpendicularly extending member which is fixedly attached to the hoist arm at the base end and extends essentially perpendicular to the extension of the hoist arm, said perpendicularly extending member being pivotably attached to the gunwale of the boat such that the perpendicularly extending member is able to rotate around an axis perpendicular to the hoist arm;

c. a cam fixedly attached to the perpendicularly extending member sufficiently distant from the hoist arm to allow relatively free access around the hoist arm between the hoist arm and cam;

d. an actuating means movably attached to the cam such that movement of the actuating means rotates the perpendicularly extending member around its axis and pivots the

hoist arm, thereby adapting the hoist arm to hoist the load onto the gunwale of the boat by the pivoting motion; and

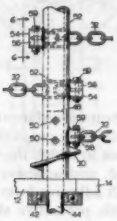
e. a drawing means attached to the base end of the hoist arm and extending rearwardly therefrom such that the drawing means is under the hoist arm when the load has been hoisted onto the gunwale, said drawing means being adapted to receive and draw the hoist line across the tip end of the hoist arm.

3,942,656

MATERIAL DISLODGING MEANS FOR SILO

James W. Lepley, Smithville, Ohio, assignor to Flying Dutchman, Inc., Smithville, Ohio

Continuation of Ser. No. 389,141, Aug. 17, 1973, Pat. No. 3,828,947. This application June 6, 1974, Ser. No. 476,783
The portion of the term of this patent subsequent to Aug. 13, 1991, has been disclaimed.
Int. Cl.² B65G *65/46*
U.S. Cl. 214—17 DA **13 Claims**



1. Material dislodging means for a silo having a discharge opening in the bottom comprising a shaft adapted to be supported for rotation about an axis, a plurality of chains arranged with inner ends adjacent said shaft at spaced locations therealong, and outer ends adapted to swing freely outward of said shaft on rotation thereof for engaging said material, and means connecting said inner ends of said chains to said shaft, connecting means for at least one of said chains, comprising means defining an opening extending transversely through said shaft for receiving a terminal link at the inner end of a chain extended therethrough with at least a portion of said terminal link extending outwardly of the surface of said shaft, pin means extending transversely through said projecting terminal links on said chains to secure the chains to said shaft, and a sharp material dislodging member connected to the outer end of each chain.

3,942,657

APPARATUS FOR UNLOADING MATERIAL SUCH AS CHIPS OR THE LIKE FROM THE BOTTOM OF A SILO

Roald Willies Knutsen, Stolsvigen, Hisoy, N-4800 Arendal, Norway

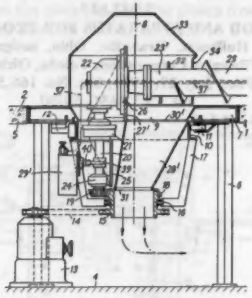
Filed Oct. 17, 1974, Ser. No. 515,612
Claims priority, application Norway, Oct. 17, 1973, 4025/73
Int. Cl.² B65G *65/46*
U.S. Cl. 214—17 DA **8 Claims**

1. An apparatus for unloading material such as chips or the like from the bottom of a silo, comprising a silo having a bottom outlet opening, an annular frame surrounding said outlet opening in the bottom of said silo, a conveyor screw being mounted on said frame, said frame being arranged for rotation about the central axis of said silo for allowing the swinging of said screw along the bottom of said silo,

a motor mounted stationarily and independently of said rotary frame,

an outlet funnel being affixed to said frame, said outlet funnel having an upper opening arranged below the inner end of said screw and a lower opening arranged coaxially with said silo central axis,

transmission means being rotatably mounted in said frame and capable of effecting power transmission between said stationary motor and said rotary screw for rotating said screw about its longitudinal axis for conveying material to said outlet orifice, the axis of said transmission means



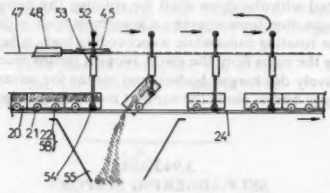
coinciding with said silo central axis, said transmission means being in the form of a ring having an inner opening whose center coincides with said silo central axis and adjoining the lower opening of said outlet funnel for thereby providing an unobstructed discharge of the material passed through said funnel.

3,942,658

INSTALLATION FOR AGGLOMERATION OF MINERALS ON A CONTINUOUS CIRCULAR GRATE

Edouard Bonnaure, Le Vesinet, France, assignor to Creusot-Loire Entreprises, Paris, France

Filed Aug. 19, 1974, Ser. No. 498,522
Claims priority, application France, Aug. 30, 1973, 73.31345
Int. Cl.² F27B *21/00*; B65G *67/30*
U.S. Cl. 214—18 R **3 Claims**

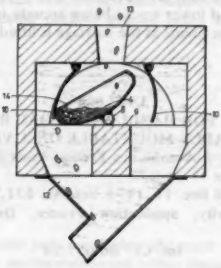


1. An installation for agglomeration of minerals on a circular grate, having: a succession of independent grate-carrier cars each of said cars having a front and a rear axle moving through successive loading, ignition, baking, cooling and discharge zones, wheels for each car including wheels on said rear axle, two circular co-axial tracks receiving said wheels driven simultaneously and continuously at the same adjustable constant angular speed, a cylically operable device in the discharge zone independent of the driving of the tracks for individual displacement of said cars with respect to said tracks, the duration of the cycle of operation of said device being proportional to the angular speed of the tracks, said device for individual displacement of said grate-carrier cars including an auxiliary control car movable along a path co-axial with said tracks, articulated arms for said control car, seizure means for said arms engageable with a member at the front portion of each of said cars, means for manipulating said arms, and a retractable jack for said arms operable to raise the front portion of each of said cars from said tracks to tilt each of said cars about its rear axle.

3,942,659
CRADLE HEARTH OVEN

Karl-Heinz Burmeister, Kleve, Germany, assignor to Ipsen Industries International Gesellschaft mit beschrankter Haftung, Kleve, Germany

Filed July 26, 1974, Ser. No. 492,207
Claims priority, application Germany, July 27, 1973, 2338204
Int. Cl.² F27B 9/16
U.S. Cl. 214—18 R 12 Claims



1. In an oven for the heat treatment of parts inside an oven chamber, a parts conveying device comprising in combination:

an elongated trough extending longitudinally through the oven chamber at a slight incline, the trough thus having an elevated loading end and a lowered discharge end;

bearing means for rotatably supporting the trough in such a way that it can execute a rocking motion about a central longitudinal rocking axis;

drive means for imparting to the trough a reciprocating rocking motion, thereby alternately moving the trough from a median orientation, in which the trough is in approximate balance with respect to its rocking axis, to either side thereof;

means for supplying treatable parts to the loading end of the trough from above the latter;

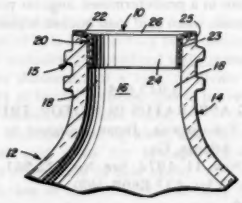
means for discharging the treated parts at the discharge end of the trough; and

a pair of laterally pivotable baffle panels arranged in the area of the loading end of the trough on either side thereof, the panels having a longitudinal pivot axis on their upper ends and engaging alternatingly that lateral extremity of the trough which is lowered in the rocking motion.

3,942,660
GLASS BOTTLE MOUTH INSERT

Gerald J. Paller, 214 N.E. 22nd St., Delray Beach, Fla. 33444

Filed Mar. 12, 1975, Ser. No. 557,873
Int. Cl.² B65D 1/02
U.S. Cl. 215—31 4 Claims



1. In combination with a bottle having a neck provided with a wall defining a throat, the neck terminating in a mouth including a lip which merges inwardly with the wall of the throat, said lip being chipped such that the bottle is rendered unsafe for use, an insert for resurfacing the mouth of the bottle, the insert comprising, in combination with the bottle:

a. a ring adhered in the throat of the bottle adjacent the mouth of the bottle;

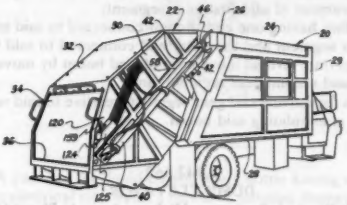
b. a flange extending away from the ring adhered to the chipped lip which terminates the neck of the bottle and configured to conform to the basic contour of the lip for covering the lip and resurfacing the mouth of the bottle; and

c. adhesive means for adhering the ring and flange to the neck of the bottle.

3,942,661
CONTROL SYSTEM FOR REFUSE HANDLING APPARATUS

Richard V. Clucker, Kenton, and Roland R. Kennedy, Galion, both of Ohio, assignors to Harsco Corporation, Camp Hill, Pa.

Filed Aug. 14, 1974, Ser. No. 497,247
Int. Cl.² B65F 3/00
U.S. Cl. 214—83.3 7 Claims



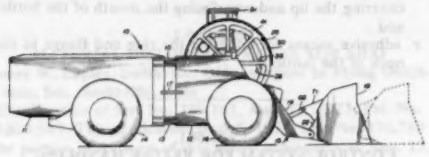
1. A rear loader type refuse truck comprising, in combination, a body including a forward refuse receiving body portion and a rear packer body portion, said rear packer body portion including a load receiving opening; a packer blade means forwardly of said load receiving opening and including mounting means for longitudinal and pivotal movement of said packer blade; a blade actuating fluid motor operatively connected to said packer blade; a load packing fluid motor operatively connected to said mounting means for compacting the load; a power flow fluid circuit including a power flow control valve means for controlling the flow to said fluid motors, said valve means including a "neutral" position and a plurality of fluid motor actuating positions; a signal flow fluid circuit including a signal flow control valve means for controlling a signal flow of fluid; fluid actuated operator means in said signal flow fluid circuit for operating said power flow control valve means; a manual controller for said signal flow control valve means, said power flow control valve means including a first spool for controlling said blade actuating fluid motor and a second spool for controlling said packing fluid motor; a first rocker bar including a central pivot connected to said first spool, and first and second end pivots; a second rocker bar including a central pivot connected said second spool, and first and second end pivots; said fluid actuated operator means including first and second slave cylinders connected to said first and second end pivots of said first rocker bar; and third and fourth slave cylinders connected to said first and second end pivots of said second rocker arm.

3,942,662

VEHICLE HAVING FRONT END LOAD SUPPORTING MEMBER

Bryant Trenary, Dallas, Tex., assignor to Marion Power Shovel Company, Inc., Marion, Ohio

Filed June 15, 1970, Ser. No. 46,210
Int. Cl.[2] E02F 3/42
U.S. Cl. 214—140 7 Claims



1. In a vehicle having a load supporting member which is to be extended, retracted, elevated and lowered relative to the vehicle, the improvement which comprises:

a first arcuate gear segment pivotally mounted on said vehicle;

a boom connected to said first gear segment and extending from said vehicle for supporting a load;

a second arcuate gear segment pivotally mounted on said vehicle, independently movable relative to said first gear segment, and positioned in proximity to said first gear segment for movement in a plane parallel to the plane of movement of said first gear segment;

a lift link having one end thereof connected to said second gear segment and the other end connected to said boom to permit vertical movement of said boom by movement of said second gear segment; and

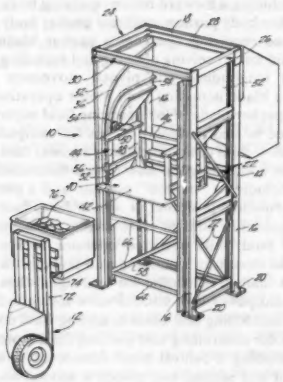
means for moving said gear segments relative to said vehicle for manipulating said boom.

3,942,663

DUMP ELEVATOR

Roger D. Wentzel, Rochester, Mich., assignor to Planet Corporation, Troy, Mich.

Filed Jan. 10, 1975, Ser. No. 540,215
Int. Cl.[2] B65G 65/04
U.S. Cl. 214—313 6 Claims



1. In combination, a dump elevator and a fork lift truck, said dump elevator comprising:

a frame;

an upper track and a lower track attached to said frame along each of two facing sides of said frame,

a carriage disposed within said frame, said carriage having guide members which are received by said upper and lower tracks, said carriage adapted to receive a load from said fork lift truck, and

a pusher assembly disposed underneath and connected to said carriage, said pusher assembly adapted to maintain said carriage in an elevated position and including a pusher bar adapted to be engaged and elevated by the forks of said fork lift truck, and

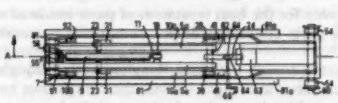
said upper and lower tracks being arcuate in shape so that said carriage pivots as the carriage is lifted by the fork lift truck.

3,942,664

DEVICE FOR HANDLING A LOAD BUCKET REMOVABLY MOUNTABLE ON A VEHICLE

Pierre Lemaire, 5 Avenue des Frenes, Vaux le Penil, 77000 Melun, France

Filed Dec. 11, 1974, Ser. No. 531,533
Claims priority, application France, Dec. 20, 1973, 73.45675
Int. Cl.[2] B60P 1/28
U.S. Cl. 214—505 12 Claims



1. A device for handling a load bucket removably mountable on a vehicle having a front end and a rear end and a framework extending longitudinally between said vehicle front and rear ends, said device comprising a boom having first and second ends and being provided, at said first end, with gripping means for gripping said bucket, while being pivotally connected at said second end to an arm which is pivotally connected to a shaft arranged transversally with respect to the framework of said vehicle and supported by a chassis which has a front end and a rear end and which also supports said boom, means being provided for angularly displacing said arm in a substantially vertical plane, at least one stop member being provided on said arm in the vicinity of said point of pivotal connection between said boom for limiting the pivotal movement of said boom with respect to said arm, said second end of said boom being provided with at least one lug adapted to co-operate with at least two abutment members located on a line extending longitudinally with respect to said vehicle framework, said abutment members being fixedly mounted on said front end of said chassis, said chassis comprising means for enabling said transverse shaft to be displaced longitudinally with respect to said framework, as well as shaft locking means for locking said shaft in a desired position with respect to said chassis, the latter being pivotally mounted at its end opposed to said boom on said vehicle framework, said device further comprising arm locking means for locking said arm in a predetermined angular position with respect to said chassis when said load bucket is placed on said vehicle.

3,942,665

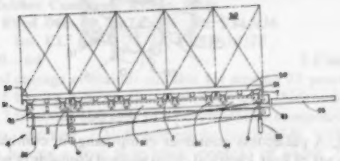
LOADING APPARATUS IN MOTOR TRUCK

Susumu Uchino, Tokorozawa, Japan, assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Nov. 11, 1974, Ser. No. 522,961
Int. Cl.[2] B60P 1/00
U.S. Cl. 214—516 4 Claims

1. A loading apparatus for a motor truck having a load supporting truck bed which is capable of moving loads on the load supporting truck bed in a rotational manner comprising

two longitudinal tracks on opposite sides of the truck bed in spaced relationship and substantially covering the entire bed area of said truck with the exception of a void area at least approximately the size of the area covered by one load, and a lateral track that is positioned at the front of the truck bed between said longitudinal tracks substantially covering said void area, each of the longitudinal tracks and lateral track including a pair of spaced guide rails that extend substantially throughout the respective entire longitudinal and lateral lengths of the truck bed, a fixed load supporting means having a centrally located parallel groove being secured between



each pair of guide rails secured to the truck bed, an endless chain assembly means positioned within the centrally located groove of said fixed load supporting member and being adapted to engage a movable load for rotational movement of the load around the entire area of the truck bed, each end of said longitudinal and lateral tracks being provided with a corresponding lifting means that is located directly below the truck bed and in contact with the respective end of each guide rail, such that upon actuation of the lifting means, the end of the guide rail in contact therewith is raised or lowered in the desired fashion.

3,942,666

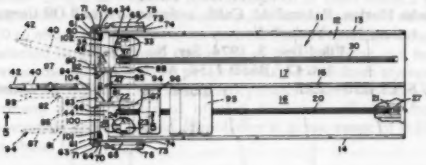
BALE TRAILER

Donald Wayne Pfremmer, Box 181, Harmony, Minn. 55939

Filed Aug. 21, 1974, Ser. No. 499,306

Int. Cl.² B60P *1/38*

U.S. Cl. 214—518 **2 Claims**



1. An agricultural vehicle for loading and transporting large cylindrical hay bales of known diameter and length, comprising:

a wheeled chassis;

an elongated bale transporting body mounted on said chassis and including longitudinal walls spaced in accordance with the diameteer of a bale, to divide said body into a plurality of lateral sections, and to prevent the bales from rolling sideways off said body;

conveyor means extending along each section of said body between said walls for transporting material resting thereon rearwardly of said body;

loading means at the front of said body for raising a bale from the ground and depositing it lengthwise on its side on either conveyor means at the front of said body;

means including a tongue pivoted to said body at a location behind the front of said body for setting out of a normal central position into either of two opposite laterally offset positions, to cause continuous lateral displacement of said agricultural vehicle as it moves behind said towing vehicle whereby either body section may be out of line with the towing vehicle and available for front loading;

means for positioning said loading means to deposit bales in a selected one of said channels;

means for actuating said conveyor means and said loading means and means connected to said tongue and said positioning means for automatically positioning the loading means, in accordance with offsetting of said tongue in front of that body section which is clear of the towing vehicle for loading.

3,942,667

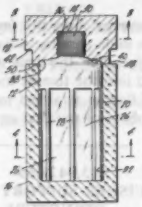
PACKAGE FOR BOTTLE AND CAP

Tedd Theodore Thomas, New Canaan, Conn., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed May 16, 1974, Ser. No. 470,453

Int. Cl.² B65D *23/08, 41/62, 51/18*

U.S. Cl. 215—12 R **1 Claim**



1. A package for liquid comprising a bottle having substantially cylindrical side walls, a threaded reduced diameter neck and a conical shoulder connecting said sidewalls and said neck, a threaded cap having a roughened outer surface disposed on said neck, and a plurality of vertically extending ribs disposed on said cylindrical side walls, a first body member of a resilient cork material having a first recess therein of slightly less diameter than the diameter of said bottle across a pair of opposed ribs, said first recess having a depth of not more than the length of said side walls, said bottle being press fitted in said first recess so that said vertically extending ribs engage said resilient cork material, and a second body member of resilient cork material having a second recess therein said second recess including an upper portion of slightly less diameter than said cap and a lower portion conforming to said shoulder portion of said bottle, said cap being press fitted in said upper portion of said second recess so that the roughened outer surface of said cap engages said second body member and snugly grips said cap, and said lower portion of said second recess encloses said shoulder portion of said bottle, said first and second body members being in abutting relationship.

3,942,668

LOW TEMPERATURE STORAGE CONTAINER

Richard Francis Eberle, Pardeeville, and John Alden Kroetz, Sun Prairie, both of Wis., assignors to W. R. Grace & Co., New York, N.Y.

Filed Jan. 30, 1975, Ser. No. 545,571

Int. Cl.² B65D *7/24*

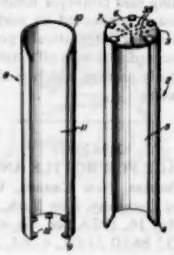
U.S. Cl. 220—8 **14 Claims**

1. An elongated container substantially round in cross section comprising:

a. a substantially round elongated hollow female member having: (i) a first end; (ii) a second end; and (iii) a peripheral opening extending from the first end to the second end;

b. an end wall positioned on the first end of the female member;

c. a substantially round elongated hollow male member having: (i) a first end; (ii) a second end; and (iii) a peripheral opening extending from the first end to the second



end slidably inserted into the female member with the first end of the male member adjacent to the second end of the female member, the male member being rotatable where inserted into the female member; and

d. a plurality of fingers attached to and extending inward from the periphery of the first end of the male member.

3,942,669

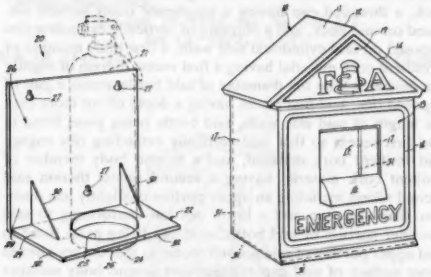
FIRE EXTINGUISHER SUPPORT AND ENCLOSURE STRUCTURE

Philip M. Savage, Jr., 45 Linnaean St., Cambridge, Mass. 02138

Filed Apr. 14, 1975, Ser. No. 567,769

Int. Cl.[2] B65D *25/54, 43/12*

U.S. Cl. 220—18 **10 Claims**



1. A decorative enclosure and support structure for storing a small, hand-held fire extinguisher within a building, said structure comprising a support member comprising a horizontally extended, rectangular platform possessing a depression centrally located therein, said depression adapted to receive the base of said fire extinguisher, an upwardly extended, vertical back wall member integral with said platform at an edge thereof, said back wall member adapted for removable mounting attachment to a vertical support surface, and at least one pair of reinforcement structures connecting said platform and said back wall member for retaining said platform in fixed position relative thereto while under stress; and a cover adapted for removable engagement with said support member, said cover comprising a peaked top, a gabled ornamental face and two parallel opposed side walls, said face and said side walls all integral with said top, and said side walls continuous with said face at opposite vertical edges thereof.

3,942,670

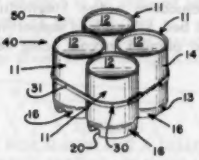
PALLET-LESS DRUMS

John Mingus, and Mary Mingus, both of 3349 Sandy Beach Road, Grand Island, N.Y. 14072

Filed Jan. 31, 1975, Ser. No. 545,786

Int. Cl.[2] B65D *19/08*

U.S. Cl. 220—23.4 **1 Claim**



1. A pallet-less container comprising, in combination:

a set of four identical drum shaped containers wherein each of said containers includes a flat top surface, a flat bottom surface and cylindrical side wall surfaces;

a base plate affixed to the bottom surface of each of said containers, the base plates being defined by an inverted frusto-conical configuration having a flat top surface and a flat bottom surface, and an inverted U-shaped channel extending diametrically through each of said base plates and opening out of the bottom surface thereof;

an elongated strap configured flat retainer adapted to be passed about the containers to retain the containers together in side-by-side parallel relationship, said strap having a first end and a second end, a single opening adjacent said first end extending through said strap, and a series of longitudinally spaced apart openings disposed in said second end of said strap providing selective adjustment; and

a retainer spring having its opposite ends affixed to opposite ends of said retainer strap for retaining said retainer strap position about said containers.

3,942,671

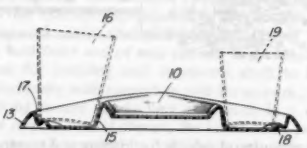
CARRY-OUT TRAY

John Florian, Bakersfield, Calif., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 3, 1974, Ser. No. 529,159

Int. Cl.[2] B65D *1/34*; A47G *19/00*

U.S. Cl. 220—23.8 **10 Claims**



1. A molded carry-out tray for food formed with a plurality of circular wells for retention of circular cups having chimes projecting downwardly from the bottoms thereof; the improvement in structure of each of said wells which comprises a flat circular bottom wall, a circular side wall integral with and extending upwardly from said bottom wall and adapted to retain a circular cup in said well, a projection extending upwardly from said bottom wall near an edge thereof and spaced inwardly of said bottom wall from the adjacent portion of said side wall to provide a continued surface of said bottom wall between said projection and the adjacent portion of said side wall adapted to support between the said projection and the said adjacent portion of said side wall the chime of a cup of diameter approximately equal to that of said bottom wall, said projection being further adapted to contact at its surface

remote from the side wall with the bottom of a cup of diameter substantially less than that of said bottom wall to thereby retain such cup of lesser diameter in contact with a portion of said side wall remote from said projection.

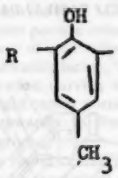
3,942,672

POLYURETHANE COMPOSITION AND METHOD OF PREPARATION

Jeffrey W. Saracsan, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 20, 1974, Ser. No. 534,936
Int. Cl.² B65D *25/14*; C08D *18/28*
U.S. Cl. 220—64 **2 Claims**

1. A metal storage container suitable for storing 25 percent sulfuric acid having a protective innerliner of a thickness of from about 3 to about 100 mils of a polyurethane composition prepared by reacting 2,2¹-diaminodiphenyldisulfide with a prepolymer having a free isocyanate content of about 2 to about 8 percent, said prepolymer having been prepared by reacting in the presence of from about 1 to about 5 parts by weight of a 2,6 dialkylated para cresol having the formula:



where R is an alkyl radical having from 4 to 12 carbon atoms; (1) 100 parts by weight of an hydroxyl containing polymeric polyol having a molecular weight of from about 1000 to about 5000, a corresponding hydroxyl number of of from 110 to about 20 and an hydroxyl functionality of of from about 2 to about 3 and where the polymeric polyol comprises from about 70 to about 100 percent units derived from conjugated dienes selected from the group consisting of 1–3 butadiene and isoprene and up to about 30 percent units derived from styrene; and (2) a diphenyl methane diisocyanate, where the ratio of primary amino groups of of said diaminodisulfide to free isocyanate groups of said prepolymer is in the range of 0.5/1 to about 1/1.

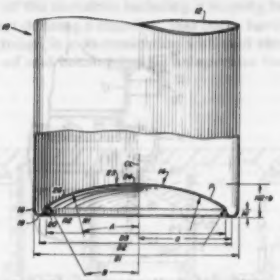
3,942,673

WALL CONSTRUCTION FOR CONTAINERS

Seung W. Lyu, Homewood, and Donald Martin, Rolling Meadows, both of Ill., assignors to National Can Corporation, Chicago, Ill.

Filed May 10, 1974, Ser. No. 468,817
Int. Cl.² B65D *1/12*
U.S. Cl. 220—66 **10 Claims**

1. A container having a cylindrical side wall and an integral bottom wall at the lower end thereof, said bottom wall and side wall being joined by an annular outwardly directed bead having one end joined to said side wall and an opposite end, said bottom wall having an ellipsoidal dome within said opposite end of said bead, said ellipsoidal dome having a central spherical portion defining a first radius having its center located on the center line of the container, said ellipsoidal dome having an annular portion surrounding said spherical portion, said annular portion having a second radius which is less than said first radius, and a substantially vertical portion between



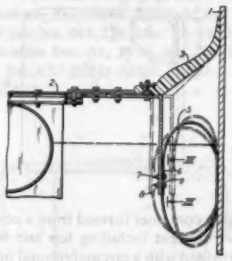
the outer periphery of said annular portion and said opposite end of said bead.

3,942,674

ELECTRICAL GROUNDING FOR TANK FLOATING COVER

Ardell H. Nelson, 5701 Lost Forest No. 2202, Houston, Tex. 77018

Filed July 31, 1974, Ser. No. 493,321
Int. Cl.² B65D *87/20*; H05F *3/02*
U.S. Cl. 220—221 **3 Claims**



1. In an upright tank, a floating cover spaced inwardly from the side of the tank and movable therein in vertical, horizontal and circumferential directions, a flexible sealing ring encircling the cover and secured thereto, the outer edge of the sealing ring slidably engaging the tank side wall, a cable loop disposed between the cover and the tank side wall and spanning the space between them, said loop being spaced vertically from the sealing ring, and means securing one side of the loop to the side of the cover, the opposite side of the loop engaging the tank side wall, and the loop always being compressed laterally between the cover and the side of the tank as the cover moves in the tank in any of said directions, whereby the loop maintains electrical contact with said side wall.

3,942,675

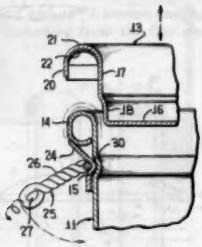
FULL OPENING RECLOSABLE CONTAINER CLOSURE

Gary Hasegawa, Morton Grove, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed July 29, 1974, Ser. No. 492,743
Int. Cl.² B65D *41/02*
U.S. Cl. 220—260 **10 Claims**

1. An easy opening container closure of the type having a depending external retaining skirt, a peripheral weakening

line around said skirt, and tensioning means carried by said skirt below said weakening line for tensioning said skirt along



said weakening line and effecting rupture of said skirt along said weakening line.

3,942,676

TEAR-OPEN PACKAGING CONTAINER

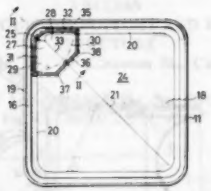
Hans Beckers, Rheydt, and Horst Bonus, Viersen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 5, 1974, Ser. No. 521,187

Claims priority, application Germany, Nov. 7, 1973, 2355550

Int. Cl.² B65D *41/32*

U.S. Cl. 220—270 **10 Claims**



1. A packaging container formed from a composite material having a cover element including top and bottom walls the latter being provided with a circumferential primary score line defining a portion capable of being torn away from said cover and further including an initial point of fracture, a plate-like means secured to the surface of said bottom wall adjacent to the point of initial fracture of said score line, the improvement comprising plural juxtaposed tab means having portions arranged to overlie said plate-like member and secondary score line means communicating with said tab means defining a limited area to be removed from said cover upon fracturing at least one of said tab means from said plate-like means.

3,942,677

CLOSURES FOR VESSELS

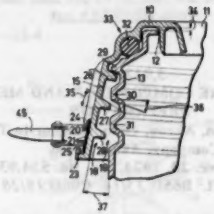
Reinold Hagen; Peter Giese, both of Bonn-Holzlar, and Peter Klüsener, Bonn-Bad Godesberg, all of Germany, assignors to Kautex-Werke Reinold Hagen GmbH, Bonn-Holzlar, Germany

Filed Mar. 13, 1974, Ser. No. 450,728

Int. Cl.² B65D *45/34*

U.S. Cl. 220—304 **31 Claims**

1. The combination of a vessel having a mouth in a marginal region of said vessel, a closure and selectively engageable stressing means associated with said closure for causing said closure to seal said mouth, said closure having a lid portion and a rim depending from said lid portion, relatively interengageable projections and recesses being provided on said marginal region and in said rim, said rim being sub-divided into sections forming a positive fit with said marginal region between said interengageable projections and recesses when said closure is secured to said marginal region by stressing of said stressing means, and said rim sections being, when not



stressed by said stressing means, splayed radially outwardly relative to said marginal region such that said projections and recesses are in relative engagement at most loosely over only a portion of the height of said rim.

3,942,678

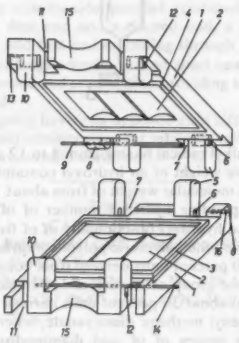
INSULATING CONTAINER

Richard-Wilhelm Heydemann, Via Tagliaferri Blocco A., CH-6911 Campione, Lago di Lugano, Switzerland

Filed Oct. 29, 1973, Ser. No. 410,406

Int. Cl.² B65D *51/04*

U.S. Cl. 220—342 **1 Claim**



1. A portable temperature insulating receptable for storing and transporting containers for beverages and food comprising two complementary, molded sections of insulating material, said sections having plane meeting faces surrounding partial, complementary, closely adjacent cavities in each section to form complete cavities when said sections are closed, complementary rib and groove formations on said plane faces interfitting to form a tight closure and surrounding all said cavities when said sections are closed, one edge of each section having a pair of molded extensions projecting over the edge of the other section, so that said extensions are aligned transversely, aligned openings in said extensions and a rod through said aligned openings with said rod in the plane of said meeting faces to form a hinge, the opposite edges of said sections having molded projections overlapping the edges of the sections and recesses on said sections receiving said projections, said sections having central meeting portions between said projections and recesses, aligned openings through said projections and the walls of said recesses, and a rod through said openings to maintain said sections closed, said central portions being cut out with said rod through the space formed by the cut out portions to provide a carrying handle.

3,942,679
SEALABLE CLOSURE ARRANGEMENT

Anthony J. Starr, Wilmington, Del., assignor to Container Corporation of America, Chicago, Ill.

Filed Dec. 20, 1974, Ser. No. 534,707
Int. Cl.² B65D 43/06
U.S. Cl. 220—355 3 Claims

1. In a sealable closure arrangement for a plastic container body and a full-removable-cover, the combination of:

a. a unitary, tubular body having an open upper end terminating in an annular stiffening rim;

b. said rim comprising:

i. a peripheral, horizontal, retaining ledge portion extending radially outward from said body;

ii. a vertical center portion extending upwardly from the outer periphery of said ledge portion and presenting thereon an outwardly facing, V-shaped aligning groove;

iii. a sealing portion curving inwardly from the upper extremity of said center portion and then curving outwardly and upwardly to present therein a generally semicircular groove;

c. a cover having a round central portion with a peripheral, dependent, annular, compliant skirt adapted for sealing engagement with said rim;

d. said skirt comprising inner and outer walls joined by a curved upper wall to form a channel for receiving said rim, said outer wall including:

i. a vertical upper portion presenting an inwardly projecting V-shaped aligning bead adapted to be received within the V-shaped aligning groove of said rim for properly positioning said cover on said body;

ii. a locking portion joined to the lower extremity of said upper portion by a relatively flexible hinge portion having a cross-sectional area which is of less thickness than that of the locking and upper portions;

iii. said locking portion including at least one cover camming and retaining lug adapted for engagement with the underside of the retaining ledge portion of said rim;

e. said skirt upper portion being adapted to engage and compress said rim sealing portion to effect a snug sealing engagement between said rim and skirt;

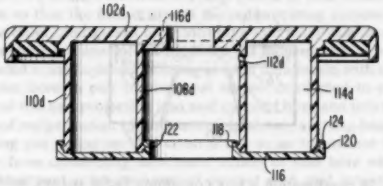
f. means engageable with said cover locking portion for exerting a radial force thereagainst to retain said cover firmly on said container.

3,942,680
SPRAY PAINT CONTAINER AND ATTACHMENT THEREFOR

Larry E. Seeley, 1278 Front St., Binghamton, N.Y. 13905, and Edward H. Seeley, Box 72, Great Bend, Pa. 18821

Continuation-in-part of Ser. No. 384,280, July 31, 1973, Pat. No. 3,858,810. This application Apr. 30, 1974, Ser. No. 465,695
Int. Cl.² B65D 45/16
U.S. Cl. 220—324 24 Claims

1. A closure for a spray paint container comprising a cover adapted to carry a spray paint gun, means carried by said cover and cooperable with the container for releasably securing said cover to the container, means carried by said cover providing for communication between the interior of the container when said cover is releasably secured thereto and the exterior of the container including a housing having walls at least in part defining a chamber, said cover having an aperture therethrough in communication with said chamber, one of the walls of said housing having an aperture therethrough

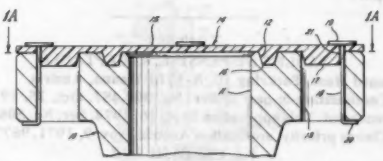


providing communication between said chamber and the interior of the container when said cover is secured thereto, said apertures being spaced one from the other, and means carried by said cover and cooperable with the container for sealing the cover to the container when said cover is secured thereto whereby said apertures provide a vent passage through said cover and housing into the container.

3,942,681
FLANGE PROTECTOR

Ernest T. Richardson, 312 Sneed, Berwick, La. 70342

Continuation of Ser. No. 415,216, Dec. 12, 1973, abandoned. This application Dec. 31, 1974, Ser. No. 537,693
Int. Cl.² B65D 41/00, 45/00
U.S. Cl. 220—324 9 Claims



4. For use in protecting a flange having an annular groove in the outer side thereof, and a circle of bolt holes therethrough concentrically outwardly of the groove, a device comprising a disc having one side adapted to be disposed against said outer side of the flange, an annular ridge on the one side of the disc for substantially filling the groove in the flange, a plurality of spaced-apart plugs on said one side of the disc for fitting closely within certain of the bolt holes in the flange, and a plurality of fasteners each being extendible through a plug to dispose an end thereof in position to bear against the inner side of the flange for holding the plug in its respective bolt hole.

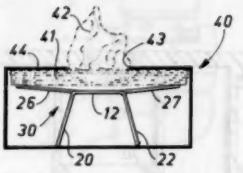
7. For use in protecting a flange having an annular groove in the outer side thereof, and a circle of bolt holes therethrough concentrically outwardly of the groove, a device comprising a disc having one side adapted to be disposed against said outer side of the flange, an annular ridge on the one side of the disc for substantially filling the groove in the flange, a plug on said one side of the disc for fitting closely within a bolt hole in the flange, and a fastener extendible through the plug to dispose an end thereof in position to bear against the inner side of the flange for holding the plug in its respective bolt hole.

3,942,682

ELEVATING DEVICE FOR A FACIAL TISSUE BOX

Douglas H. McKay, 237 Betty Ann Drive, Willowdale, Ontario, Canada

Filed Aug. 15, 1974, Ser. No. 497,575
Int. Cl.² B65H 1/08
U.S. Cl. 221—58 2 Claims



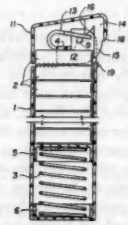
1. In combination a box containing facial tissues, said box having an aperture located centrally in the top surface of the box to provide access for removal of tissues therethrough, and an elevating device within the box underlying the tissues in supporting and elevating relation to facilitate removal of tissues, said elevating device comprising an integral one piece body formed from a single sheet of plastic material, with a pair of oppositely extending finger surfaces and a pair of laterally extending platform surfaces providing a generally planar cruciform tissue support surface lying in a plane substantially parallel with said box top, said platform surfaces each having a pair of bendable leg portions connected at the plane of said platform surfaces and flexible downwardly from said plane, said leg portions each being substantially equal in width with said finger surfaces and extending substantially parallel thereto when compressed to lie in said plane, said leg portions when extending downwardly out of said plane permitting partial downward displacement of the corners of said tissues within the box to facilitate grasping of the central portion of the topmost tissue in supported relation on said cruciform support.

3,942,683

TABLET DISPENSING RECEPTACLE

Eduard Haas, Parkring 10, A-1010 Vienna, Austria

Continuation-in-part of Ser. No. 300,487, Oct. 25, 1972, abandoned. This application Sept. 16, 1974, Ser. No. 506,749
Claims priority, application Austria, Nov. 9, 1971, 9677/71
Int. Cl.² B65H 1/12
U.S. Cl. 221—229 8 Claims



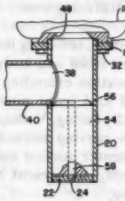
1. In a receptacle having a housing for receiving and sequentially dispensing individual shaped bodies from a stack of like one of said bodies received in the housing, the housing having two side wall extensions at a dispensing end thereof, a cover pivotally mounted on the side wall extensions at the dispensing end about a transverse pivoting axis, the cover having an abutment adjacent the pivot for pushing an uppermost one of the shaped bodies and dispensing it from the receptacle housing when the cover is pivoted about the pivoting axis, and spring means in the housing for pressing the stack of shaped bodies towards the dispensing end to place sequential uppermost ones of the shaped bodies of the stack into a dispensing position, the improvement of an elastically deformable transverse ledge extending between the side wall extensions of the housing in a horizontal plane and integral with the side wall extensions, the uppermost shaped body being pressed by the spring means against the ledge, and a bent-over leaf spring integrally projecting from the ledge, the integral ledge and leaf spring constituting a spring, the outer end of the bent-over leaf spring engaging the abutment of the cover and the spring biasing the pivotal cover into a closed position and permitting pivoting of the cover about the pivoting axis against the spring bias into an open and dispensing position, and the pivoting axis extending above the horizontal plane defined by the ledge.

3,942,684

AIR ACCUMULATOR AND AERATOR FOR MATERIALS-HANDLING

Harold M. Stetson, Neponset, Ill., assignor to Martin Engineering Co., Neponset, Ill.

Filed Apr. 10, 1975, Ser. No. 566,776
Int. Cl.² F17C 5/06
U.S. Cl. 222—3 10 Claims



1. In combination: a compressed air accumulator including a tank-like structure having a wall provided with a circular opening and a flat face portion normal to the axis of the opening and surrounding the opening; an aerator including a hollow cylindrical body projecting from and normal to the face and coaxial with the opening and having one end proximate the opening and a second end remote from the opening, a mounting flange rigid with the one end and seating on the face portion with the opening and said one end in communication, closure means fixed to the other end of the body and having an inlet connectible to a source of air under pressure, said body having a lateral discharge port intermediate the ends of the body, and a piston valve slidably movable in the body between a first position adjacent to the closure means and uncovering both the opening and the discharge port and a second position closing both the discharge port and the opening, said piston valve having at one end a portion operative to close said opening in said second position; and means securing the flange to the accumulator face portion.

3,942,685

DISPENSER ASSEMBLY

Marvin T. Lindner, West Chicago, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed June 12, 1974, Ser. No. 478,569
Int. Cl.² B67D 5/56
U.S. Cl. 222—129.1 8 Claims

1. A drink dispenser assembly for dispensing one of a plurality of beverages consisting of water or a mixture of water and a drink concentrate comprising:

a reservoir means for supplying water in said assembly;

a support adapted for mounting in a refrigerator.

a selector valve means mounted on said support for controlling the flow of water in said assembly;

said selector valve means includes a plurality of distributing valve assemblies, each having a closed position prevent-

ing water flow therethrough and an open position permitting water flow through its outlet;

nozzle means connected to said distributing valves for dispensing said beverages;

said selector valve means includes a plurality of laterally extending selector keys disposed in juxtaposed relation for easy beverage identification and selection;

said keys are supported by said support for pivotal movement in generally parallel planes each having one end operably connected to a respective one of said valve assemblies for moving the latter between its closed and open position to permit water to flow to said nozzle means for dispensing therefrom;

container means on said support for storing a drink concentrate therein;

mixing means connected between said container means and the outlet of at least one of said valve assemblies for mixing a concentrate with said water; and

said nozzle means includes one nozzle connected to said mixing means and said outlet of said one valve assembly for dispensing a mixture of water and a concentrate therefrom upon actuation of its associated key;

and including inlet valve means having a main inlet valve, and a common operating lever is supported by said support for camming engagement with said one end of each of said keys for actuating said inlet valve to permit water to flow through to said distributing valve assemblies.

3,942,686

GLUEING DEVICE

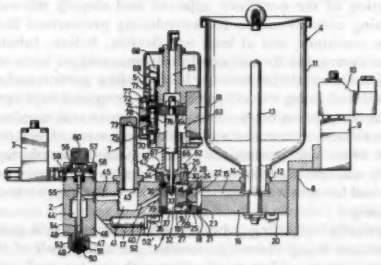
Oscar Roth, Zurich, Switzerland, assignor to Involvo AG, Bunzen, Switzerland

Filed May 1, 1974, Ser. No. 466,031

Claims priority, application Switzerland, May 2, 1973, 6199/73

Int. Cl.² B67D *5/62*

U.S. Cl. 222—146 HE **6 Claims**



1. A gluing device for packing machines comprising, in combination, glue storing means; nozzle means; control means for said nozzle means; pump means intermediate and in communication with said glue storing means and said nozzle means and including a double-acting reciprocating pump having a pump casing and a piston mounted in said casing for reciprocation with respect thereto; support means for said glue storing, pump and nozzle means; heating means connected to said support means; and actuating means for said pump means comprising a cylinder housing connected to said casing and defining a cylinder bore, an actuating piston mounted in said bore for reciprocation therein between two end positions, means for supplying an actuating medium into said cylinder bore so as to reciprocate said actuating piston therein, a piston rod connecting said piston to said actuating piston so that the former shares the reciprocating movement of the latter, and means for controlling said supplying means and including a control rod mounted for movement in a bore provided in said cylinder housing in axial parallelism with said cylinder bore, a pair of abutment screws connected to said control rod and projecting into said cylinder bore and into the path of reciprocation of said actuating piston, a spring-biased braking pin acting on said control rod so as to prevent the latter from conducting movement axially of said bore when said abutment screws are out of contact with said actuating piston and to permit such movement when one of said abutment screws is contacted by and entrained by said actuating piston as the latter approaches one of said end positions thereof, and a switch operative for controlling the flow of the actuating medium into said cylinder bore and having a cam cooperating with said control rod.

3,942,687

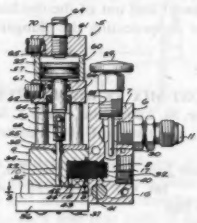
APPLICATOR FOR MOLTEN THERMOPLASTIC ADHESIVES

Richard L. Walus, Minneapolis, and Vernon K. Quarve, Brooklyn Center, both of Minn., assignors to Possis Corporation, Minneapolis, Minn.

Filed Oct. 2, 1974, Ser. No. 511,351

Int. Cl.² B67D *5/46*

U.S. Cl. 222—146 HE **11 Claims**



1. A dispenser having a discharge orifice and by which molten thermoplastic fluid can be delivered from a source thereof to a zone of use in successive small, discrete, uniform quantities, said dispenser comprising:

A. body means;

B. means at an external surface of the body means providing the discharge orifice of the dispenser;

C. said body means having

1. a bore therein providing a pump cylinder with a mouth at one end thereof through which fluid enters and leaves the cylinder,

2. a cavity providing an inlet compartment having an entrance through which fluid enters from a source thereof and an exit through which fluid can leave the inlet compartment,

3. first passage means therein to communicate the exit of the inlet compartment with the mouth of the pump cylinder, and

4. second passage means to communicate the mouth of the pump cylinder with the discharge orifice, said first passage means comprising

a. an inlet valve chamber communicated with the exit of the inlet compartment through the port of an inlet valve seat,

b. a ball in said inlet valve chamber movable to and from engagement with said inlet valve seat, and

c. an elongated leaf spring having an anchored end portion and a free end portion the latter of which projects into the inlet valve chamber and engages the ball therein to yieldingly hold the same on the inlet valve seat,

said second passage means comprising

a. an outlet valve chamber in open communication with the discharge orifice and communicated with the inlet valve chamber through the port of an outlet valve seat,

b. a ball in said outlet valve chamber, and

c. an elongated leaf spring having an anchored end portion and a free end portion the latter of which projects into the outlet valve chamber and engages the ball therein to yieldingly hold the same on the outlet valve seat,

each of said leaf springs being flatwise normal to its associated valve seat so that the inlet and outlet valve chambers can have small volume and still accommodate flexing of the free end portions of the leaf springs therein;

D. a plunger reciprocable in the pump cylinder to draw fluid into the mouth of the cylinder during the charging stroke of the plunger and to expel fluid from the cylinder mouth during its discharging stroke, the orientation of said first and and second passage means and their respective valve seats being such that during the charging stroke of the plunger the ball in the outlet valve chamber is drawn tightly against its seat and the ball in the inlet valve chamber is drawn off its seat, enabling fluid to pass from the exit of the inlet compartment into the mouth of the pump cylinder, while during the discharge stroke of the plunger the disposition of the balls with respect to their respective seats is reversed, enabling fluid to be forced from the pump cylinder and out of the discharge orifice; and

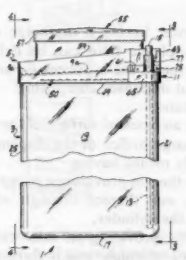
E. means for reciprocating the plunger.

3,942,688

POST-MIX VENDOR SYRUP TANK

Harry H. Pryor, St. Louis, and James J. Schinker, Hazelwood, both of Mo., assignors to UMC Industries, Inc., New York, N.Y.

Filed June 27, 1974, Ser. No. 483,874
Int. Cl.² B67D 1/16, 5/60
U.S. Cl. 222—108 **9 Claims**



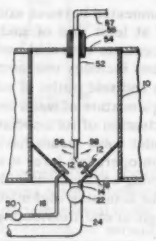
2. A tank comprising a container open at the top and a cover for the top having an opening therein for pouring a liquid into the container, said cover having an upwardly extending inner flange surrounding said opening, an upwardly extending outer flange surrounding said inner flange, and a downwardly extending flange interfitting said container, said inner and outer flanges in conjunction with the portion of the cover between said inner and outer flanges defining a channel surrounding said opening for collecting liquid being poured which misses said opening to prevent such spillage from running down the outside of the container to the floor, said cover being removable from the container for pouring out the collected spillage and cleaning the cover, the inner flange being higher than the outer flange to preclude liquid collected in the channel from spilling over into the container.

3,942,689

APPARATUS FOR REMOVING COMPACTED FIBROUS MATERIALS FROM CONTAINERS

Gerald Frank Dakin, Jr., Milan, Mich.; Georges Louis Olney, Danville, and Desmond Patrick Robertson Smyth, Asbestos, both of Canada, assignors to Johns-Manville Corporation, Denver, Colo.

Continuation of Ser. No. 347,017, April 2, 1973, abandoned, which is a continuation of Ser. No. 147,911, May 28, 1971, abandoned. This application Feb. 27, 1974, Ser. No. 446,181
Int. Cl.² B65G 3/12, 69/06
U.S. Cl. 222—195 **1 Claim**



1. In an apparatus for dispensing compacted fibrous material from a container having a discharge outlet and a sloping sidewall adjacent to said outlet, said sloping sidewall having fixed nozzles mounted thereon for loosening the material in the portion of the container adjacent said sloping sidewall, comprising conduit means for introducing pressurized fluid into the container, and at least one flexible, hollow, tubular member connected to said conduit means, said at least one flexible, hollow, tubular member having a free portion and an open end and being of sufficient length to extend said open end into the portion of the container adjacent said nozzles a sufficient distance to cause a whip-like movement of said free portion when said pressurized fluid is passed therethrough whereby said fibrous material compacted above said open end is loosened for removal from said container, the improvement comprising:

a vertically extending tubular guide member, said guide member being slideably mounted on a top wall of the container in sealing relationship with the top wall, with said flexible tubular member extending along said guide member and slidably mounted within said guide member in sealing relationship with the interior wall surface of said tubular guide member to permit varying the elevation of said guide member and thus varying the exposed length of said flexible tubular member.

3,942,690

SLIDING GATE WITH SPRING BIASED BOLTS FOR SEALING

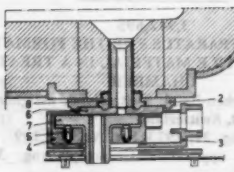
Leo Lohrer, Duren-Gurzenich, Germany, assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Oct. 16, 1974, Ser. No. 515,382

Claims priority, application Germany, Oct. 17, 1973, 7337290[U]

Int. Cl.² B22D *37/00, 41/10*

U.S. Cl. 222—512 6 Claims



1. In a slider valve for a vessel, which valve comprises:
a replaceable fixed ceramic head plate;
a metal frame in which said head plate is mounted;
a replaceable ceramic slidable plate beneath said head plate;
a slidable frame in which said slidable plate is mounted;
operating means connected with said slidable frame; and
a plurality of spring-loaded bolts carried by said frame and having heads;
the improvement in which the outer faces of the bolt heads carry a large number of projections which have crests located in a common plane transversely of the vessel;
said projections bearing against the underside of said slidable plate, whereby said bolts urge said slidable plate against said head plate.

3,942,691

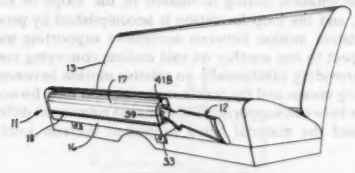
ENCLOSED GUN LOCK

David J. Sisak, 317 Idaho St., Portage, Mich. 49081

Filed Feb. 4, 1974, Ser. No. 439,312

Int. Cl.² B60R *11/00*

U.S. Cl. 224—1 R 12 Claims



1. In a gun mount for storing and locking a gun, the gun mount being adapted for connection to a motor vehicle and having housing means defining therein a substantially closed compartment for storage of the gun barrel, comprising the improvement wherein said housing means is elongated and tubular and defines therein a substantially closed elongated compartment adapted to have positioned therein the barrel and trigger mechanism of a rifle or shotgun, said housing means including an elongated housing member having support means associated therewith for supportingly engaging the gun barrel, said housing means also including elongated cover means extending longitudinally throughout substantially the complete length of said housing member and being hingedly mounted on said housing member for swinging movement about an axis extending substantially parallel to the longitudinal direction of said housing member so that said cover means is swingable between open and closed positions, said cover means when in said closed position coacting with said housing member for defining said closed elongated compartment therebetween, said cover means being substantially L-shaped in cross-section and including first and second wall portions which respectively function as the top wall and at least part of the front wall of the housing means when said cover is in its closed position, said cover means being hinged along the lower edge of said second wall to said housing member so that said cover means swings outwardly and downwardly away from said housing member when swingably moved into its open position, one end of said housing means being closed, the other end of said housing means being defined by end wall means which has opening means therethrough when said cover means is closed, said housing means being free of openings except for said opening means, said end wall means having edge means defining said opening means and disposed so as to closely surround the butt of said gun for maintaining the barrel and trigger mechanism of the gun within said compartment while permitting the butt of said gun to project outwardly from said compartment, and locking means coacting between said housing member and said cover means for fixedly locking said cover means to said housing member when said cover means is in said closed position, whereby said gun can be removed from said housing means only by swingably moving said cover means into its open position.

3,942,692

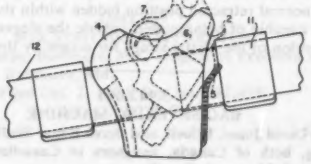
SPRING-RELEASE SAFETY HOLSTER

Quentin J. Chica, 104 Draper St., Springfield, Mass. 01108

Filed Mar. 22, 1974, Ser. No. 454,361

Int. Cl.² F41C *33/02*

U.S. Cl. 224—2 B 9 Claims



1. A holster for a handgun having a frame, a barrel, a trigger guard and a hand grip comprising a holster having spaced opposed side walls and means interconnecting the side walls at the respective forward and rear ends of said holster body whereby said holster body defines a pocket open at its upper end for receving the handgun, and means carried by said body for releasably retaining the handgun within said pocket including means adjacent the rear end of said body and said opening engageable with the trigger guard of the handgun to prevent direct withdrawal of the handgun from said pocket through the open upper end of said body, resilient means carried by said body adjacent its forward end engageable with the handgun frame for biasing the handgun in a rearward direction such that the trigger guard engageable means is maintained in engagement with the trigger guard, said resilient means comprises an upstanding elongated leaf spring, means for substantially rigidly securing the lower portion of said leaf spring to said holster body at the forward end thereof, the upper portion of said spring being disposed adjacent the open upper end of the holster body and being flexible for movement in generally forward and rearward directions between a normally disposed rearward position engageable with the handgun frame to retain the handgun in the holster pocket and a forwardly disposed rearwardly biased position enabling withdrawal of the handgun from the holster, said resilient means being movable forwardly against its bias in response to movement of the handgun forwardly within said pocket to disengage the trigger

guard of the handgun from the trigger guard engagement means thereby enabling withdrawal of the handgun from the holster through its open upper end.

3,942,693

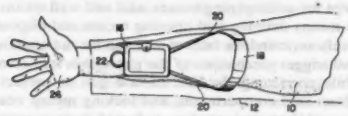
WRIST PURSE WITH ELASTIC SECURING MEANS

Florindo Tocci, Nashua, N.H., assignor to Raymond Lee Organization Inc.

Filed Nov. 20, 1974, Ser. No. 525,297

Int. Cl.² A45C 1/00

U.S. Cl. 224—28 B 2 Claims



1. A device adapted for use by an individual wearing a garment with a sleeve through which an arm extends, said device comprising:

a first strap secured to the arm and extending therearound in non slidable fixed position within the sleeve near the elbow;

a wrist purse having a pocket for holding valuables and having two opposite ends;

a second strap secured at each end to a corresponding one end of the purse, said purse and said second strap forming a loop which is disposed on the wrist and is slidable therealong; and

a plurality of elastic straps, each of which is secured at one end to the first strap and at the other end to said loop, said elastic straps extending longitudinaliy along the arm between the first strap and the loop, whereby the purse has a normal retracted position hidden within the sleeve and is capable of being pulled outside the sleeve against the tension of the elastic straps for access by the wearer.

3,942,694

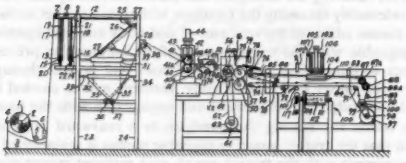
BAG SEVERING MACHINE

Elwyn David Jones, Beloeil, and Derek Edgar Scuffell, Brownsburg, both of Canada, assignors to Canadian Industries Limited, Montreal, Canada

Division of Ser. No. 395,937, Sept. 10, 1973, Pat. No. 3,871,269, which is a division of Ser. No. 207,306, Dec. 13, 1971, abandoned. This application Oct. 4, 1974, Ser. No. 512,128

Int. Cl.² B26F 3/00

U.S. Cl. 225—100 1 Claim



1. A machine for severing individual bags from a continuously fed length of bags joined by perforated junctures which comprises first and second spaced apart sets of double coating rollers, the second set of rollers being positioned downstream from the first set of rollers, and positioned intermediate said first and second set of rollers a bag support means comprising a lower endless conveyor belt and in contact therewith a cooperating upper endless conveyor belt, said cooperating conveyor belts being adapted to support the length of bags between the contacting surfaces of the belts as the length of bags passes from between the first set of rollers to the second set of rollers, the second set of rollers being adapted to grasp the length of bags issuing from between the conveyor belts, and means for driving the two sets of rollers and intermediate conveyor belts so that the surface speed of the second set of rollers is greater than the speed of the conveyor belts and the speed of the conveyor belts is greater than the surface speed of the first set of rollers, thus extending the length of bags as it passes from the first set of rollers to the second set of rollers so as to sever the individual bags at the perforated junctures, the individual severed bags being delivered from between the second set of rollers.

3,942,695

PROCESS AND APPARATUS FOR THE FORMATION OF LOOPS OF TEXTILE MATERIAL IN A TREATMENT CHAMBER

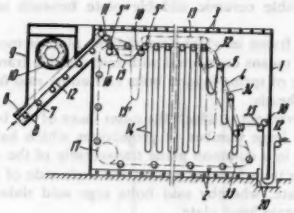
Hans Fleissner, Riehen-Basel, Switzerland, assignor to Vepa Aktiengesellschaft, Switzerland

Filed Aug. 31, 1973, Ser. No. 393,299

Claims priority, application Germany, Aug. 31, 1972, 2242890

Int. Cl.² B65H 17/42

U.S. Cl. 226—1 53 Claims



1. A process for the formation of loops of textile material freely suspended over a plurality of successive supporting roller means for the conveyance of the textile material which is sensitive to longitudinal tension through a treatment chamber slowly traversed by the supporting means supported by an endless conveying means wherein the supporting means coming into contact with the textile material are maintained constantly in rotation during formation of the loops of textile material, and the loop formation is accomplished by producing a relative motion between successive supporting means with respect to one another on said endless conveying means, and by providing substantially no relative motion between the supporting means and the textile material, said loop formataking place between supporting roller means rotating at different speeds and the material being supported thereon solely by friction.

3,942,696

WEB GUIDING APPARATUS

Camille Francois Pira, Edegem, and Joseph Irma DeRoeck, St. Katelijne-Waver, both of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Jan. 29, 1975, Ser. No. 545,228

Claims priority, application United Kingdom, Jan. 30, 1974, 4394/74

Int. Cl.² B65H 25/26

U.S. Cl. 226—21 11 Claims

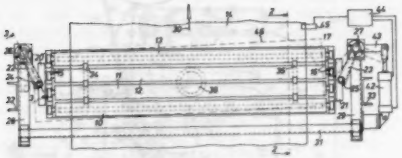
1. Apparatus for correcting the lateral divergence or displacement of a travelling air-impervious web from an intended line of longitudinal travel between two points, said apparatus comprising:

a series of at least two freely rotatable parallel rollers for supporting the web at one side thereof at a zone between said points, said rollers being mounted for pivotable movement so that the angle between their axes and said

line of travel, in the projected plane of the web, can be varied,

a freely rotatable stationary roller mounted upstream from said series of pitotable rollers, the distance between said stationary roller and the adjacent roller of the series of pivotable rollers being at least equal to 1.5 times the length of a roller; and

means for producing on one side of said roller series an air-pressure difference capable of urging a web, which in



the absence of such air-pressure difference would be pulled in a tangent plane to said rollers, to follow a path which curves into the space between said pivotable rollers thereby to increase the angle of wrap to effect a substantial frictional engagement of the web with said pivotable rollers, and means for confining said air pressure difference to substantially the length of web within said roller series whereby said web follows a rectilinear path between the stationary roller and the series of pivotable rollers.

3,942,697

HOT STRIP ROLLING APPARATUS

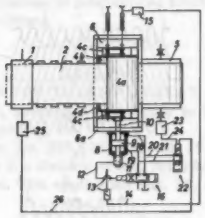
Klaus Neumann, Am Klosterhang 13, 667 St. Ingert, Saar, Germany

Filed July 31, 1974, Ser. No. 493,262

Claims priority, application Germany, Aug. 2, 1973, 2339072

Int. Cl.² B65H *17/22*

U.S. Cl. 226—46 **4 Claims**



1. A hot strip rolling apparatus comprising a rolling stand for producing hot strip, a take-up reel located downstream of the rolling stand, a driving roll stand located intermediate said rolling stand and said take-up reel, said driving roll stand comprising a pair of axially movable rolls and a control means to lock said pair of rolls against axial movement when there is no strip tension between said rolling stand and said take-up reel, and to release said pair of rolls for free axial floating movement when there is strip tension between said rolling stand and said take-up reel.

3,942,698

HELICAL-SCAN VIDEO TAPE RECORDER HAVING A TAPE-LOOSENING MECHANISM

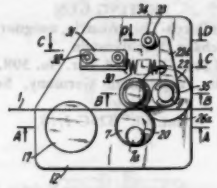
Masataka Hattori, and Hisao Toda, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1975, Ser. No. 553,504

Claims priority, application Japan, Mar. 4, 1974, 49-25004

Int. Cl.² B65H *17/20*

U.S. Cl. 226—50 **7 Claims**



1. An apparatus for scanning a magnetic video tape including a drum about which the tape is wound in a helical manner and a rotary magnetic head, wherein the improvement comprises:

a freely rotatable roller disposed along the path of the magnetic tape;

a tape loosening means disposed on the side of the tape opposite the roller for movement toward the roller whereby the tape is engaged between the loosening means and the roller; and

drive means for moving the loosening means toward the roller and rotating the loosening means so as to loosen the tape in response to an interruption of tape movement.

3,942,699

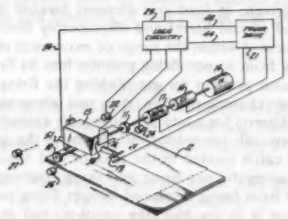
BOX STITCHING APPARATUS

Stephen Stanton, Baltimore, Md., assignor to Precision Industries, Inc., Baltimore, Md.

Filed Oct. 2, 1974, Ser. No. 511,498

Int. Cl.² B27F *7/06*

U.S. Cl. 227—3 **2 Claims**



1. A stitching machine including:

first means for (1) applying fastening means at a predetermined rate to a workpiece passing thereby and (2) generating a first control signal at said predetermined rate;

second means for moving said workpiece along the path past said first means;

third means for stopping and starting said second means in response to said first and a second control signal applied thereto;

fourth means responsive to said first control signal and a spacing signal for generating said second control signal;

said fourth means being a voltage controlled timer;

said stitching machine also including a summing amplifier for providing said spacing signal;

means for generating a predetermined signal indicative of said desired spacing;

means for generating a feedback signal responsive to the actual stitch spacing;

means for applying said predetermined signal to said summing amplifier; and

means for applying said feedback signal to said summing amplifier.

3,942,700

SAFETY DEVICE FOR A FASTENING ELEMENT SETTING GUN

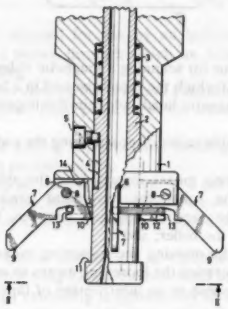
Elmar Maier, Feldkirch-Tisis, Austria, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Sept. 24, 1974, Ser. No. 508,881

Claims priority, application Germany, Sept. 27, 1973, 2348693

Int. Cl.² B25C *1/18*

U.S. Cl. 227—8 **9 Claims**



1. A setting gun for driving fastening elements into a receiving material by means of an explosive charge, comprising a housing, a barrel having a muzzle end from which the fastening elements are driven and a rearward end, said barrel mounted within said housing and axially displaceable rearwardly therein from a position where the gun cannot be fired to a firing position by pressing the muzzle end of the barrel against the receiving material into which the fastening element is to be driven, at least one element located adjacent the muzzle end of said barrel and displaceably from a blocking position located within the range of movement of said barrel rearwardly from its non-firing position into its firing position and a release position for establishing the firing position of said barrel, characterized in that said element includes a catch, said barrel has a laterally outwardly extending shoulder located forwardly toward the muzzle end of the gun from said catch, sid catch located in the path of said shoulder or said barrel between the non-firing and firing positions to prevent the barrel from being displaced into its firing position when the element is in the blocking position, and in the release position of said element said catch being displaced out of the path of said shoulder so that the barrel can be displaced into the firing position.

3,942,701

MACHINE FOR FORMING AND INSERTING COMPONENT LEADS

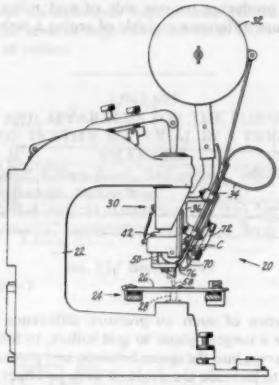
Ralph A. Morrison, Topsfield, and Waldo B. Hanson, Rowley, both of Mass., assignors to USM Corporation, Boston, Mass.

Filed Dec. 30, 1974, Ser. No. 537,341

Int. Cl.² B25C *5/08*

U.S. Cl. 227—90 **9 Claims**

1. In a machine for mounting electronic components having coaxial leads, portions of which leads are to be bent to extend in parallel relation into preformed circuit board holes, a reciprocable driver bar movable toward and from the circuit board, a hold-down having a lost motion connection to the driver bar, said hold-down having spaced, grooved feet engageable with the coaxial lead portions, respectively, and friction means interengageable with the driver bar and the hold-down for



causing the latter yieldingly to bear on said coaxial lead portions before the driver bar acts positively to insert the parallel lead portions into the holes.

3,942,702

CORRUGATED TUBING

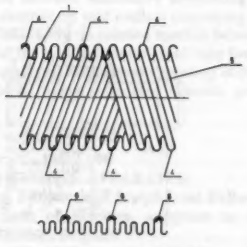
Marco Dreyer, Lucerne, Switzerland, assignor to Boa AG Luzern, Lucerne, Switzerland

Filed Mar. 29, 1974, Ser. No. 455,963

Claims priority, application Switzerland, Mar. 29, 1973, 4565/73

Int. Cl.² B23P *19/04*

U.S. Cl. 228—145 **8 Claims**



1. A method of producing a helically corrugated flexible tube which comprises winding a corrugated profiled strip in a helical path such that the edges of said strip overlap and then welding together the overlapped edges, wherein every welded corrugation of the resultant corrugated flexible tube is followed by at least one unwelded corrugation and wherein the corrugations that are welded together have less stiffness than the other corrugations to thereby reduce the stiffness resulting from the overlapping of the edges of said strip.

3,942,703

MACHINE FOR THE SUCCESSIVE WELDING OF TWO HEADER BOXES IN THE TWO END PLATES OF RADIATORS

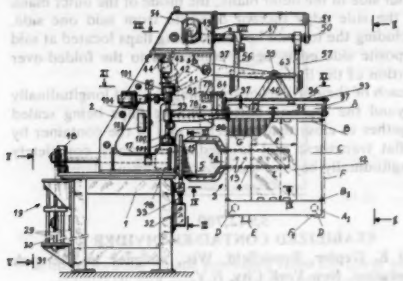
Alain Edouard Plegat, Asnieres, France, assignor to Societe Anonyme des Usines Chausson, Asnieres, France

Filed Dec. 9, 1974, Ser. No. 531,100

Claims priority, application France, Jan. 15, 1974, 74.01325

Int. Cl.² B23K *1/04, 37/04*

U.S. Cl. 228—41 14 Claims



1. A machine for the successive welding of two header boxes in two end plates of different sized radiators, comprising:

a frame;

a rotating gripper supported by said frame and comprising two arms, namely a fixed arm and a mobile arm, said two arms being provided with removable plates of a length corresponding to the distance between the end plates of each radiator to be machined to constitute, by end portions thereof, bearing surfaces for said end plates;

a pressing element, controlled in time relation with the rotation of the gripper, to exert a pressure successively on each of the header boxes by maintaining them against the corresponding end plate held by the removable plates of the gripper; and

two heating units respectively placed on parallel rotating shafts and comprising burner heads connected to said shafts through sliding supports, whereby said burner heads are adjustable in position as a function of the radiator to be machined.

3,942,704

APPARATUS FOR THERMAL RELAY WELDING

William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

Division of Ser. No. 395,528, Sept. 10, 1973, Pat. No. 3,861,575, which is a division of Ser. No. 184,338, Sept. 28, 1971, abandoned. This application Oct. 15, 1974, Ser. No. 514,581

Int. Cl.² B23K *37/02*

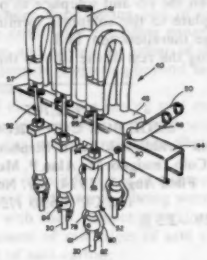
U.S. Cl. 228—58 4 Claims

1. In battery processing apparatus having a plurality of elements for application to a corresponding plurality of battery parts, element positioning apparatus comprising:

a. a mounting base in said apparatus with said elements carried on said base;

b. adjustable positioning means engaging said elements and said base to fix the position of said elements with respect to said base and to permit the changing of the relative lateral position of said elements with respect to one another; and

c. a guide plate carried by said base and having sets of voids therein for at least partially receiving portions of said elements therein for guiding and positioning each of said elements relative to said base and to each other in a



plurality of predetermined desired alternate lateral positions.

3,942,705

PROTECTION FOR ALUMINUM TUBING DURING ULTRASONIC SOLDERING

Michael R. Barbay, Tyler, Tex., assignor tc General Electric Company, Louisville, Ky.

Filed Nov. 11, 1974, Ser. No. 522,332

Int. Cl.² B23K *1/06*

U.S. Cl. 228—111 3 Claims

1. The method of soldering a joint of an aluminum tubing assembly in a molten solder bath that is subjected to ultrasonic energy source comprising:

immersing the tubing assembly in said bath so that said joint is in an area having a preselected level of solder cavitation sufficient to scrub surface oxide from said joint to cause the solder to adhere to said surface to seal said joint before surface erosion of said surface takes place;

coating a portion of said tubing assembly prior to said immersing of the tube assembly with a layer of tin plating so that the surface area of said portion when in an area having a greater level of solder cavitation than said preselected level is protected from erosion damage in said area having a greater level of solder cavitation during the scrubbing and soldering of said joint in said preselected level.

3,942,706

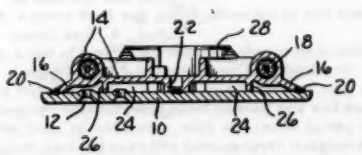
STEAM IRON SOLEPLATE CONSTRUCTION

Robert L. Schaeffer, Brockport, N.Y., and Kaj Toft, Upland, Calif., assignors to General Electric Company, Bridgeport, Conn.

Division of Ser. No. 491,463, July 24, 1974. This application May 5, 1975, Ser. No. 574,234

Int. Cl.² B23K *31/02*

U.S. Cl. 228—164 2 Claims



1. The method of assembling a steam iron soleplate, steam generator, and steam distributor subassembly comprising the steps of,

stamping out a thin wrought soleplate,

placing a cast coverplate with steam generator and heating element cast therein and depending continuous peripheral rib directly on the soleplate,

welding the coverplate to the soleplate by a continuous weld between the rib and soleplate to permanently secure the coverplate to the soleplate forming a steam distributor passage therebetween, and

assembling the rest of the iron to this subassembly.

3,942,707

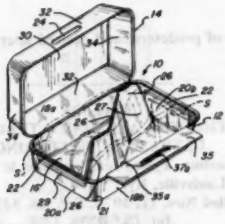
SHOE BOX CONSTRUCTION

Juan Carlos Schidlowski, and Stephen F. Walker, both of Denver, Colo., assignors to Alan P. McGregor, Denver, Colo.

Filed Aug. 7, 1974, Ser. No. 495,333

Int. Cl.² B65D 1/24

U.S. Cl. 229—2.5 R **9 Claims**



1. A container for footwear comprising in combination:

an open topped receptacle having a bottom wall and side walls, said side walls being downwardly convergent whereby identical ones of said receptacles can be nested,

a top member adapted to lie over the open top of the receptacle to selectively close the open top of the receptacle, and

internal divider means in said receptacle adapted to separate respective ones of a pair of said footwear, said divider means opening downwardly through the bottom of the receptacle so as to pass through a generally S-shaped curve intersecting said opposite side walls at locations which are unequally spaced from adjacent side walls and thereby defining adjacent compartments in the receptacle of a size and configuration to approximate the size and configuration of a shoe.

3,942,708

LIQUID AND AIR TIGHT PACKAGE

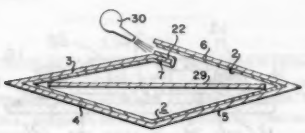
Od Wikar Christensson, Stockholm, Sweden, assignor to Christenssons Maskiner & Patenter Aktiebolag, Sweden

Filed Mar. 1, 1974, Ser. No. 447,355

Claims priority, application Sweden, Mar. 16, 1973, 7303698

Int. Cl.² B65D 5/56, 25/14

U.S. Cl. 229—14 BA **6 Claims**



1. A fluid tight container comprising:

an outer blank of a stiff material such as cardboard or the like, said outer blank having a plurality of wall panels, each panel having attached thereto a bottom closing flap and a top closing flap;

an inner lining of a flexible material such as plastic, metal foil or the like, said lining being laminated over substantially the entire inner surface of said the wall panels and extending longitudinally beyond the outer periphery of said top and bottom closing flaps and including a portion extending laterally beyond the outer periphery of one side edge of the outer blank, this portion also extending laterally beyond the top and bottom closing flaps of the wall panel at said one side edge;

the said portion of the lining being folded over said one side edge as well as over the side edges of the top and bottom closing flaps at said one side edge, and attached to the outer side of the outer blank; the inside of the outer blank at the side edge thereof opposite from said one side, including the top and bottom closing flaps located at said opposite side edge, being connected to the folded-over portion of the lining;

and each of the portions of the lining located longitudinally beyond the top and bottom closing flaps being sealed together to close that respective end of the container by a flat transverse seal located substantially completely longitudinally beyond its respective closing flaps.

3,942,709

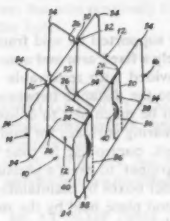
STABILIZED CONTAINER DIVIDER

Richard E. Gepfer, Brookfield, Wis., assignor to Clevepak Corporation, New York City, N.Y.

Filed Jan. 2, 1975, Ser. No. 537,945

Int. Cl.² B65D 5/48, 25/04

U.S. Cl. 229—15 **14 Claims**



1. A divider for use in the container to divide the internal space of the container having a partition extending in the first direction and a tying strip extending in a direction intersecting the partition, the partition and the tying strip being joined so that an end of the partition is connected to an intermediate portion of the tying strip and wherein the partition and tying strip have interengaging slots which are interlocked at the point of intersection, the partition being scored along the vertical extension of its slot and having a portion of the partition extending past the point of intersection folded along the score, the folded portion being joined to the tying strip and forming a reinforcing member.

3,942,710

FOLDING CARTON WITH INTERIOR STRUTS

Stafford D. Collie, Severna, Md., assignor to Potlatch Corporation, San Francisco, Calif.

Filed Aug. 30, 1974, Ser. No. 502,015

Int. Cl.² B65J 5/50, 5/10, 5/48

U.S. Cl. 229—39 R **16 Claims**

1. A folding carton having an exterior rectangular cross section for packaging a member having a nonrectangular cross section comprising, in combination,

a front panel, side panels, and a rear panel,

a strut panel extending from one of said panels,

an extension strut formed in said strut panel and having an extension strut score,

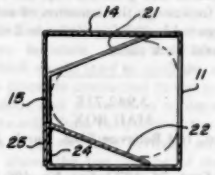
a reverse strut formed in said strut panel and having a reverse strut score parallel to and spaced from the extension strut score,

a glue flap portion adjacent the junction of the strut panel and the panel from which it extends,

said extension and reverse struts being above and below each other,

said glue flap portion being secured to the marginal edge of the panel remote from the strut panel to form a tubular folding carton with front, side and rear panels,

top closure means extending from the upper portion of ones of said panels,



bottom forming means extending from the lower portion of said panels and secured to each other to form a bottom when the carton is erected,

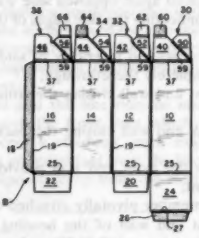
said extension and reverse strut being formed to extend from and reversely fold from said strut panel when the carton is erected to have an angular relationship each with the other and having their ends contact ones of said panels, whereby an interior nest is provided by the struts in the carton when erected to receive a non-rectangular cross sectioned member and nestingly engage the same against rotation.

3,942,711

DECORATIVE CARTON CLOSURE

John D. Desmond, and Joseph J. Hart, both of Philadelphia, Pa., assignors to Container Corporation of America, Chicago, Ill.

Filed Mar. 28, 1975, Ser. No. 563,063
Int. Cl.² B65D 5/10
U.S. Cl. 229—39 R **1 Claim**



1. In an automatic end closure arrangement for a collapsible, decorative carton formed from a unitary blank of foldable paperboard, the combination of:

a. opposed first and second pairs of side walls hingedly interconnected on parallel score lines to form a tubular structure open at one end;

b. opposed first and second pairs of closure flaps hingedly attached to related end edges of said first and second pairs of side walls, respectively;

c. each of said closure flaps including a major section, hingedly attached at one edge thereof to a related side wall on a hinge line extending in a direction normal to said score lines, and a minor section, hingedly attached to another edge of said major section along a fold line extending at an angle of less than 90° with respect to said score and hinge lines;

d. each of said closure flaps having one of said sections presenting a free outer edge extending generally parallel to said hinge line and having the other of said sections presenting an extension projecting beyond said free edge of said one section;

e. said first pair of closure flaps having said extensions on their respective major sections, and said second pair of closure flaps having said extensions on their respective minor sections;

f. said minor sections of said first pair of closure flaps being folded 180° on said fold lines and being secured in face-to-face relation with their respective major sections to prevent the exposure of raw edges of said closure flaps from the outside of said carton;

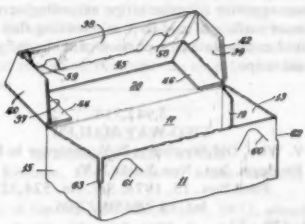
g. said extensions on each of said first pair of closure flaps being secured in face-to-face relation with respective extensions on said second pair of closure flaps, so that when the carton is moved from a collapsed condition to an erected condition, all of said closure flaps will automatically be folded sequentially into overlapped relationship to close said one end of said tubular structure.

3,942,712

CARTON HAVING HINGED HOODED COVER

Patrick L. Bundy, and Ross R. Harrison, both of Battle Creek, Mich., assignors to Michigan Carton Company, Battle Creek, Mich.

Filed Aug. 9, 1974, Ser. No. 496,116
Int. Cl.² B65D 5/54, 5/66
U.S. Cl. 229—51 TC **18 Claims**



1. A carton comprising:

1. a body portion having a front wall panel, a rear wall panel, side wall panels, and a bottom panel,

2. a reclosable cover comprising

a. a cover top panel hingedly connected to the rear edge of said rear wall panel,

b. a cover front wall panel connected to said cover top panel, and

c. a pair of cover side wall panels connected to said cover front wall panel and said cover top panel, and

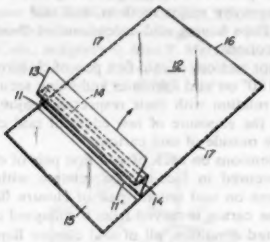
3. a recess provided at the upper portion of each corner between said front wall panel and said side wall panels of the body of said carton, each said recess having spaced apart sides and extending from an upper marginal edge of said panels thereinto a given length, the length of said recesses being a substantial proportion of the width of said cover front wall and said cover side walls, thereby relieving stress caused by the overlapping of said cover over the top of the body portion of said carton when said cover is closed.

3,942,713

PRESSURE SENSITIVE ADHESIVE CLOSURE FOR BAGS INCORPORATING AN ADHESIVE CUFF-LOCK DESIGN

Robert H. Olson, Pittsford, and William J. Clayton, Fairport, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 25, 1974, Ser. No. 445,180
Int. Cl.² B65D 33/16
U.S. Cl. 229—62 3 Claims



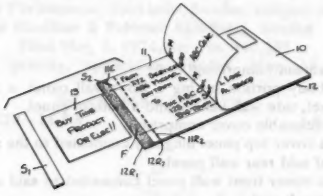
1. A thermoplastic bag comprising a front wall and a rear wall, said walls being continuously joined together along their bottom edges, said front and rear walls being heat sealed together along the major portion of their opposite longitudinal edges, the upper portions of said front and rear bag walls initially forming flaps which are not joined together along their opposite longitudinal edges, said rear bag wall upper flap being turned downwardly into overlying relationship with an interior portion of said rear bag wall surface and said rear wall flap being sealed along its opposite longitudinal edges to the upper edges of said rear bag wall, thereby forming a downwardly facing pouch, said upper flap portion of said front bag wall forming a locking flap and being characterized by having a pressure-sensitive adhesive stripe extending across the width of the inner surface of said flap, said locking flap being folded in a Z-fold configuration, a portion of said configuration covering said stripe.

3,942,714

TWO-WAY MAILER

Lester V. Wise, Old Westbury, N.Y., assignor to Federal Business Products, Inc., New York, N.Y.

Filed Nov. 15, 1974, Ser. No. 524,322
Int. Cl.² B65D 27/06
U.S. Cl. 229—73 7 Claims



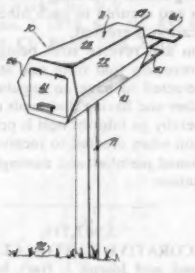
1. A two-way mailer for an exchange between a recipient and a forwarder, comprising three superposed sheets having the same dimensions save for the middle sheet whose left edge falls short of the matching left edges of the top and back sheets, said sheets being marginally secured together except at the left edge of the middle sheet to define a pack having a forwarding envelope pocket between the top and middle sheet and a return envelope pocket between the middle and back sheet, the face of the top sheet being addressed to the recipient of the mailer, the face of the middle sheet being addressed to the forwarder of the mailer, the top and back sheets being perforated along corresponding first lines which lie intermediate the left edges of these sheets and the left edge of the middle sheet to define a first stub, the zone of the back sheet between the first line thereon and the edge of the middle sheet constituting a return envelope flap and having an adhesive layer thereon, the middle and back sheet being perforated along corresponding second lines which lie adjacent the left edge of the middle sheet to define a second stub, whereby when the first stub is removed by the recipient the top sheet may be peeled from the pack to extinguish said forwarding envelope and expose the return envelope to permit the flap of the return envelope to be folded over and sealed to said second stub for transmission by the recipient to the forwarder, and when said second stub with the flap thereon is thereafter removed by the forwarder, the contents of said return envelope may be extracted by the forwarder and the middle sheet separated from said back sheet.

3,942,715

MAILBOX

Fred E. Anderson, 104 Bellevue Blvd. North, Bellevue, Nebr. 68005

Filed Sept. 24, 1973, Ser. No. 400,422
Int. Cl. A47g 29/12
U.S. Cl. 232—17 1 Claim



1. A rural type mailbox comprising, in combination:
an elongated hollow housing having a flat elongated rectangular horizontally extending bottom surface, a flat elongated rectangular horizontally extending top surface disposed above and spaced from the bottom surface, and a pair of spaced apart opposed side wall members vertically interconnecting the side edges of the top and bottom members;
a compartment defined interiorly of said surfaces and extending completely therethrough;
a vertical front end wall closing the front of the compartment;
a vertical back end wall closing the back of the compartment;
an opening in the front end wall providing access to the compartment;
a front door member pivotally attached along its top edge to the front end wall of the housing and adapted for swinging pivotal movement thereabout between a normally closed position covering the front wall opening and an open position permitting access to the compartment in the housing;
spring means associated with the front door member urging the same into the normally closed position;
a handle projecting outwardly from the bottom exterior portion of the door adapted to be grasped by an individual's hand to effect the opening of the door;
a magnet secured to the front edge of the bottom housing surface adjacent the bottom edge of the opening in the front end wall and adapted to magnetically engage the back surface of the front door when in the closed position to releasably secure the front door in the closed position;

an opening provided in the back end wall to provide access to the compartment;

a back door member pivotally attached along its bottom edge surface to the bottom portion of the back end wall and swingably operable between a normally closed position covering the back end wall opening and an open position providing access to the compartment;

spring means resiliently retaining the back door member in the normally closed position;

an elongated rectangular corrugated lining member disposed longitudinally along the interior bottom surface of the compartment and including a plurality of side-by-side transversely spaced apart and longitudinally extending ridges and valleys therealong in a manner to support the mail in the compartment resting on the ridges to maintain such mail off the valleys of the corrugated liner which might have moisture, dirt, and other contaminants thereon which would tend to spoil the mail;

signal means pivotally connected to the exterior surface of the back door and movable in a plane parallel to and spaced outwardly from the plane of the door, the signalling means being movable between an upright position projecting above the top surface of the housing and a downward position projecting outwardly of one of the side wall surfaces of the housing;

the signal means comprising:

a flat rectangularly shaped bar member having a flag like signal member connected at one end thereof with the opposite end projecting outwardly from the flag member to be pivotally connected to the exterior surface of the back door;

an elongated slot extending through the terminating end; a pivot pin projecting outwardly of the back door and slidably engaged in the slot of the bar member to permit reciprocal movement of the bar member therealong;

a ridge like projection disposed transversely across the terminating end and projecting outwardly of the surface of the bar member disposed immediately adjacent the exterior surface of the back door, the ridge like projection adapted to frictionally engage the back door for retaining the signal means in a selected position;

the bar being pivotable and slidable about the pivot pin between an upright position and a down position;

a holding pin projecting outwardly of the back door adjacent one edge of the back door and adapted to support the bar when in the down position to retain such selected position;

the side wall members diverge outwardly at their midpoints such that the horizontal area in the compartment defined at the midpoints of the side members is greater than the horizontal area in the compartment defined at either the top surface or the bottom surface of the compartment;

such that mail and the like may be inserted by a mail carrier through the front door which is normally disposed adjacent a roadway, such mail being readily removed by an individual from the back door which is normally disposed away from the roadway.

3,942,716

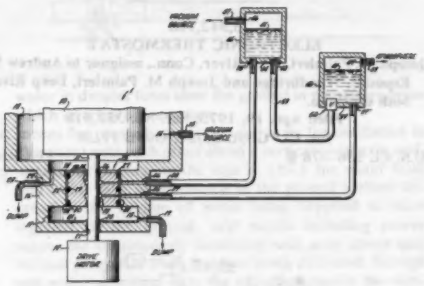
FLOW-THRU VACUUM BUSHING FOR ULTRACENTRIFUGES

Kenneth E. Jacobson, Fremont, and Gary C. Thomas, Los Altos, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jan. 15, 1973, Ser. No. 323,447
Int. Cl.² B04B *15/02, 15/08*
U.S. Cl. 233—1 A **9 Claims**

1. In a vacuum centrifuge of the type including: a bushing through which a rotor drive shaft passes from atmospheric conditions into an evacuated rotor chamber, said bushing having a first annular chamber surrounding said drive shaft adjacent the atmospheric side of said bushing; a first oil reservoir at atmospheric pressure; and first conduit means for conducting oil from said first atmospheric oil reservoir to said first annular chamber, said first atmospheric oil reservoir being positioned at a greater height than said first annular chamber whereby said oil flows by gravity to said first annular chamber, said oil flowing from said annular chamber along said shaft primarily towards said rotor chamber, the improvement wherein said bushing has a second annular chamber surrounding said drive shaft and positioned between said first annular chamber and said rotor chamber and comprising:

a second oil reservoir adapted to have air pressure evacuated therefrom;



second conduit means for connecting said second annular chamber to said second oil reservoir; and

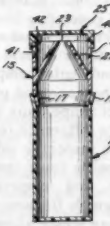
said drive shaft and said bushing being so arranged and constructed as to produce a restriction to the flow of oil along said shaft between said second annular chamber and said rotor chamber which is substantially greater than the restriction to flow of oil in said second conduit whereby substantially all of said oil flowing along said shaft is directed from said second annular chamber via said second conduit means to said second oil reservoir when said second oil reservoir has air pressure evacuated therefrom.

3,942,717

SPECIMEN CONTAINER

William O. Robison, 524 Raymond, Santa Monica, Calif. 90405

Continuation of Ser. No. 331,330, Feb. 9, 1973, abandoned. This application Mar. 10, 1975, Ser. No. 556,551
Int. Cl.² B04B *9/12*
U.S. Cl. 233—26 **3 Claims**



1. A specimen container for a centrifuge comprising:

a tubular base formed with a specimen-receiving chamber having a closed end and terminating at its opposite extremity with an outwardly flared skirt forming a relatively large specimen-receiving opening;

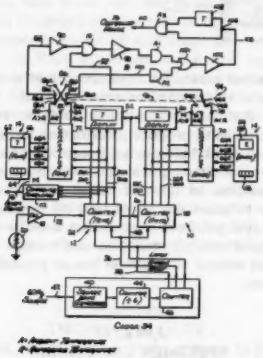
a tubular top member formed at its lower extremity with an inwardly tapered section received in said skirt, said top member being further formed with an upwardly tapered, inwardly converging top wall terminating at the end of its taper in a relatively small orifice and a peripheral wall projecting upwardly therearound; and

a cap fitted telescopically over the top end of said peripheral wall and including a top wall spaced from said orifice whereby said base and top may be separated, a specimen adapted to be analyzed insertable through said specimen-receiving opening into said chamber, and said container adapted to be centrifuged to cause buoyant particles in said specimen to float to the top thereof for disposition in said orifice for subsequent collection.

3,942,718
ELECTRONIC THERMOSTAT

Joseph M. Palmieri, Deep River, Conn., assignor to Andrew M. Esposito, Woodbridge and Joseph M. Palmieri, Deep River, both of, Conn.

Filed Apr. 19, 1973, Ser. No. 352,518
Int. Cl.² G05D *23/24*; G05B *19/38*
U.S. Cl. 236—78 R **11 Claims**

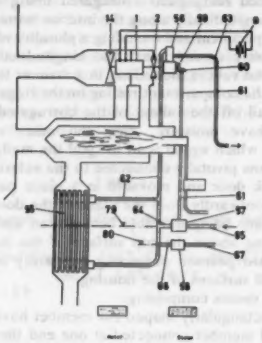


1. A digitally-operated thermostat for controlling the operation of an associated temperature changing device to maintain the temperature of an object at a desired level, comprising: digital temperature signal generating means in heat exchanging relationship with said object for generating a temperature signal comprising a pattern of voltage levels representative of the temperature of said object in binary coded decimal form, digital reference signal generating means adapted to be operated to produce a reference signal comprising a pattern of voltage levels representative of said desired level in binary coded decimal form, and digital comparing means responsive to pattern differences between said patterns of voltage levels representing said object temperature and said desired temperature when said pattern difference represents a difference in only one direction with respect to said desired level for producing an operate signal to cause operation of said temperature changing device, said temperature signal generating means comprising a variable frequency oscillator, said oscillator having a temperature sensor adapted to be placed in heat exchanging relationship with the object for varying the frequency of said oscillator as a function of the temperature of said object, counting means connected to said oscillator for encoding the frequency of said oscillator as binary coded decimal signals to provide said temperature signals, and clock means for cyclically resetting and enabling said counting means for a preselected interval of time in each cycle.

3,942,719
HEATER, ESPECIALLY FOR MOTOR-CARS

Folke Ivar Blomberg, Duvstigen 4, Lidingo, Sweden (S-181 40)

Filed July 22, 1974, Ser. No. 490,690
Int. Cl.² B60H *1/02*
U.S. Cl. 237—12.3 C **14 Claims**

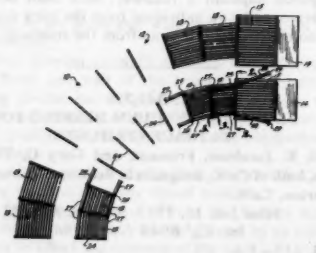


1. In an automobile heating system, a heater comprising a burner, an air system means for circulating air from said automobile through said heating system, a water system heated by said burner, means including a battery for supplying any required electric energy to said heater, said heater further including means for removing steam from the water system heated by said burner, which steam is formed at least in part responsive to the heat delivered from the burner to said water, and steam engine means driven by said steam for converting said steam there into mechanic energy, said mechanic energy being utilized to drive apparatus included in the heater, which apparatus normally consume electric current.

3,942,720
METHOD AND APPARATUS FOR CONTROLLING THE MOVEMENT OF A VEHICLE ALONG A PRESCRIBED PATH

Billie M. Crutchfield, 1205 Kings Cross Road, Blue Springs, Mo. 64015

Continuation of Ser. No. 277,173, Aug. 2, 1972, abandoned. This application Feb. 24, 1975, Ser. No. 552,187
Int. Cl.² E01B *25/00*
U.S. Cl. 238—4 **3 Claims**



1. Apparatus for guiding a wheeled vehicle capable of negotiating a turn having a predetermined maximum curvature, said apparatus comprising:

a plurality of roller sections, each having substantially parallel support rollers of diverse lengths rotatably mounted generally side by side and in a staggered longitudinal relationship to support the vehicle and permit lateral shifting thereof, each roller section defining a width greater than the width of the vehicle;

means for mounting said roller sections end to end with the support rollers of adjacent sections angled relative to one another to define a curved path having a greater curvature than said predetermined maximum curvature, said support rollers extending generally longitudinally along said curved path and chordally relative thereto; and

raised guide rail means elevated with respect to said support rollers and extending along at least one longitudinal edge of said curved path to retain the vehicle thereon.

3,942,721

FLUIDIZED POWDER FEED SYSTEM FOR ROTARY DISTRIBUTOR OF ELECTROSTATIC COATING APPARATUS

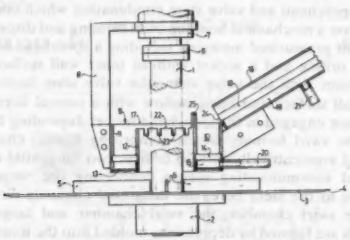
Hermann Wirth, Gundelfingen, and Lothar Muller, Giengen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 28, 1975, Ser. No. 563,076

Claims priority, application Germany, Apr. 3, 1974, 2416081

Int. Cl.² B05B *5/02*

U.S. Cl. 239—15 **6 Claims**



1. Powder feed system for the rotary spray disk of an electrostatic coating apparatus for coating with said powder work pieces caused to pass by the neighborhood of the edge of the disk while subjected to an electric potential relative to said disk, comprising:

an annular channel (10) located above the rotary disk and co-axial thereto and provided with overflow crenelations on its inner wall (17);

said inner wall defining an axial passageway, open at its bottom, whereby to feed said rotary spray disk;

means for pouring a stream of powder into said annular channel, and

means (14, 15) for maintaining the coating powder in said annular channel in a fluidized condition whereby to overflow at said crenelations to feed said disk.

3,942,722

GROUND TREATMENT APPARATUS

Ainsley Neville Ede, 36 Thornton Way, Cambridge, England

Continuation of Ser. No. 374,972, June 29, 1973, abandoned. This application Mar. 28, 1975, Ser. No. 562,909

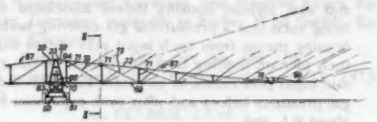
Int. Cl.² B05B *3/14, 3/18*

U.S. Cl. 239—102 **10 Claims**

1. A land irrigation machine which comprises a self-propelled steerable vehicle which can be driven and steered in a direction of forward movement along a required path on the ground while connected to a supply of water through a flexible hosepipe, the vehicle comprising

a. a steerable carriage having a water inlet for connection to the hosepipe,

b. a generally horizontal elongated boom structure pivotally mounted on the carriage, said boom structure comprising two elongated sprinkler arms which are disposed transversely to the direction of forward movement of the vehicle and extend respectively on opposite sides of the carriage over a distance several times greater than the width of the carriage, each of said arms carrying a plurality of fixed water sprinklers distributed along the length of the arm, each of said sprinklers being connected to be supplied with water from the water inlet and to deliver the



water in droplet form onto the ground in respective areas which overlap one another,

c. means for pivotally mounting said arms for oscillation in alignment with each other about a vertical pivot axis, and

d. means for decreasing the rate at which the water from said water inlet is distributed to the ground without decreasing the volume of water being supplied to each segment of the ground, said means including power means for continuously oscillating said arms about said vertical pivot axis while water is being delivered through said water sprinklers onto the ground alongside the vehicle during the forward movement of the vehicle along said path.

3,942,723

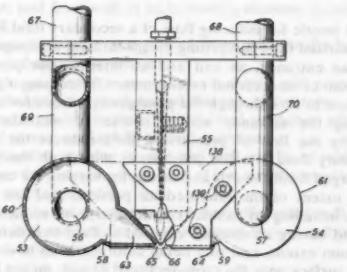
TWIN CHAMBERED GAS DISTRIBUTION SYSTEM FOR MELT BLOWN MICROFIBER PRODUCTION

Roy A. Langdon, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Apr. 24, 1974, Ser. No. 463,460

Int. Cl.² B05B *1/14*

U.S. Cl. 239—135 **12 Claims**



1. Apparatus adapted to form a pair of angularly colliding, elongated gas streams comprising:

A. a pair of elongated plenum housing means in spaced relationship to each other, each such plenum housing means defining therewithin an elongated plenum chamber and having plenum input port means defined therein and a plenum output port means defined in longitudinally extending wall portions thereof,

B. a pair of elongated nozzle means, each one being interconnected in fluid-tight engagement with a different one of said plenum housing means, each said nozzle means having a longitudinally elongated nozzle input port means defined therein and a longitudinally elongated nozzle orifice defined therein, said plenum output port means communicating with said nozzle input port means, each

of said nozzle output orifices being in spaced, parallel relationship to the other thereof and oriented angularly so that cross-sectionally the angle of inclination between respective center planes of said output orifices relative to each other ranges from about 90° to 180°, said nozzle input port means being substantially wider in width than the width of said nozzle output orifice in each of said nozzle means, the side walls of each said nozzle means generally defining a taper between said nozzle input port means and said nozzle output orifice thereof,

C. the relationship between each of said input port means and said plenum housing means associated therewith being such that a pressurized gas entering such plenum housing means from such input port means expands in such plenum housing over its pressure in the region of said input port means to an extent such that the ratio of gas pressures before and after such expansion is at least about 4:1, and

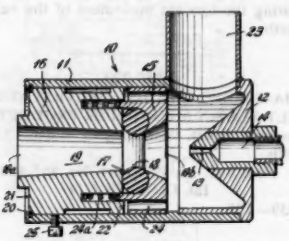
D. means for adjusting the width of each of said nozzle output orifices along the length thereof.

3,942,724

VARIABLE THROAT NOZZLE

Zenon R. Mocarski, Easton, Conn., assignor to S.R.C. Laboratories, Inc., Fairfield, Conn.

Filed Aug. 1, 1974, Ser. No. 493,567
Int. Cl.² B05B 7/00
U.S. Cl. 239—417 9 Claims



1. A nozzle for inducing flow of a secondary fluid by using a pressurized fluid comprising means forming a passageway to have an entrance, an exit and an intermediate portion of minimum cross-sectional extent, means for causing a pressurized fluid to flow through the passageway, means for communicating the entrance with a source of secondary fluid whereby the flow of pressurized fluid induces the flow of secondary fluid into the passageway with both fluids being discharged from the exit and means for varying the cross-sectional extent of the intermediate portion, said last named means including an annular ring formed from resilient material and having an exterior exposed surface that defines the minimum extent, said ring being deformable to have the exposed surface vary the cross-sectional extent, means for substantially restraining deformation of the remaining portion of the ring and in which there are movable means for mechanically deforming said deformable means to set the cross-sectional extent defined by said means.

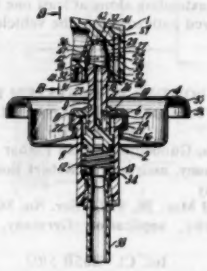
6. A nozzle for inducing flow of a secondary fluid by using a pressurized fluid comprising means forming a passageway to have an entrance, an exit and an intermediate portion of minimum corss-sectional extent, means for causing a pressurized fluid to flow through the passageway, means for communicating the entrance with a source of secondary fluid whereby the flow of pressurized fluid induces the flow of secondary fluid into the passageway with both fluids being discharged from the exit and means for varying the cross-sectional extent of the intermediate portion, said last named means including an annular ring formed from resilient material and having an exterior exposed surface that defines the minimum extent, said ring being deformable to have the exposed surface vary the cross-sectional extent, means for substantially restraining deformation of the remaining portion of the ring and in which the deformable means is a tubular ring having a hollow interior.

3,942,725

SPRAYHEAD FOR SWIRLING SPRAY

Edward H. Green, 57 Interstate Road, Addison, Ill. 60101

Filed Jan. 3, 1975, Ser. No. 538,440
Int. Cl.² B05B 1/34
U.S. Cl. 239—468 17 Claims



1. A sprayhead and valve stem combination which cooperate to form a mechanical breakup swirl forming and dispersing means for pressurized materials including a sprayhead having a spray orifice and a socket with an inner wall surface for engagement with the valve stem, the valve stem having an outer wall surface and being hollow with a central bore, the stem when engaged in the sprayhead socket depending therefrom, the swirl forming means comprising a swirl chamber arranged concentrically to said orifice, two tangential channels and communicating means connecting the tangential channels to the stem bore, the tangential channels directed into the swirl chamber, the swirl chamber and tangential channels are formed by depressions molded into the inner wall surface of the sprayhead socket, the swirl chamber and tangential channels are covered by the tightly fitted outer wall surface of the stem, the tangential channels with the outer wall surface of the stem form passageways for pressurized material, the communicating means comprise upper and lower passageways, the swirl chamber communicates with the spray orifice, one of the tangentail channels communicate at one end with the swirl forming chamber and at the other end with the upper passageway and the other tangential channel communicates at one end with the swirl chamber and at the other end with the lower passageway.

3,942,726

DEVICE FOR SPREADING DISTRIBUTABLE MATERIAL COMPRISING A RECIPROCATORILY SWINGING DISTRIBUTOR PIPE

Pieter Adriaan Oosterling, Nieuw-Vennep, and Johannes Philippus Hooftman, Hoofddorp, both of Netherlands, assignors to H. Vissers B.V., Nieuw-Vennep, Netherlands

Filed Nov. 6, 1974, Ser. No. 521,475
Claims priority, application Netherlands, Nov. 8, 1973, 7315341; July 9, 1974, 7409280
Int. Cl.² A01C 15/00
U.S. Cl. 239—659 10 Claims

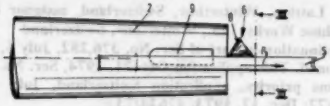
1. A device for spreading material such as fertilizer, comprising in combination:

a hopper for containing the material to be spread and having an outlet port;

a horizontally extending distributor pipe communicating with said outlet port and extending therefrom along the axis of the pipe to terminate in a discharge mouth;

means for oscillating said distributor pipe about a vertically extending pivot axis so that said discharge mouth oscillates back and forth along a horizontally extending path;

a bracket secured to said distributor pipe and including portions spaced laterally from either side of said discharge mouth; and



a deflection member secured to and extending between said portions, said deflection member having a surface facing said discharge mouth and defining a bottom edge traversing said discharge mouth, said surface being inclined to lie obliquely with respect to the axis of said distributor pipe.

3,942,727

GRINDING PLANT

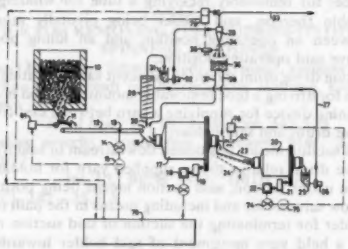
Per Anders Herman Henningsson Fahlström, Akers Runo, and Erik Alfon Jonsson, Boliden, both of Sweden, assignors to Boliden Aktiebolag, Stockholm, Sweden

Filed Apr. 8, 1974, Ser. No. 459,043

Claims priority, application Sweden, Apr. 13, 1973, 7305265

Int. Cl.² B02C *25/00*

U.S. Cl. 241—34 **9 Claims**



1. A grinding plant for autogeneous or semiautogeneous grinding of material in at least two separate grinding mills in a primary grinding step and a secondary grinding step which works with material obtained from the primary grinding step, the grinding chamber of the primary mill having a first and a second outlet means, the first outlet means including a group of openings for discharge from said grinding chamber relatively finely ground material which is to be ground in the secondary mill, the second outlet means having at least one opening to discharge from said grinding chamber material containing relatively coarse pieces to be used as grinding media in the secondary mill; the plant further including means connected between said mills for passing to the secondary mill at least all of the material removed from the primary mill which has not been ground to the desired final size, means for controlling during the grinding operation the discharge of material from the primary mill via the second outlet means so that the secondary mill will operate with a preselected quantity of grinding media, the grinding chamber of the secondary mill having an outlet means including a number of openings with a smallest cross-section which is at least substantially equal to the smallest cross-section of the openings in said first outlet means of the primary mill, and a classifying means arranged to receive the material from the secondary mill and to separate said material into a finely ground product and an intermediary material requiring further grinding, and means for continuously returning said intermediary material to the primary and secondary mills in such adjustable proportions between the amounts of material returned to the primary and secondary mills that the driving means of the primary mill operates with a preselected power consumption.

3,942,728

STOCK PULPER

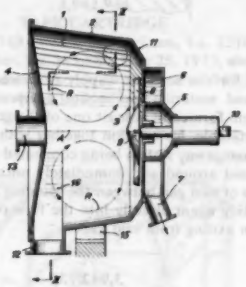
Alfred Christ, Zurich, Switzerland; Wolfgang Heinbockel; Albrecht Kahmann, both of Weingarten, Germany; Karl Muller, Ringgenweiler, Germany, and Manfred Kohrs, Ravensburg, Germany, assignors to Escher Wyss GmbH, Ravensburg, Germany

Filed Aug. 19, 1974, Ser. No. 498,720

Claims priority, application Switzerland, Aug. 27, 1973, 12229/73

Int. Cl.² B02C *23/36*

U.S. Cl. 241—46.17 **8 Claims**



1. A stock pulper for pulping and sorting waste paper comprising

a container for receiving a stock suspension, said container being in the form of a body of revolution with a front wall, an end wall and a conical circumferential wall extending from said front wall on an increasing diameter to said end wall;

a screen forming a part of said front wall for discharging stock from said container;

a discharge means in communication with said screen for discharging the stock passed through said screen;

a rotor rotatably mounted within said container adjacent said screen and axially of said container;

a first outlet opening in said end wall axially of said container for removing impurities of low specific gravity from the stock suspension; and

a second outlet opening in said circumferential wall adjacent said end wall for removing heavy impurities from the stock suspension.

3,942,729

DEVICE FOR SUPPLYING TREATMENT AGENT TO LIGNO-CELLULOSE CONTAINING MATERIAL

Borje Ingemar Fredriksson, Matfors, Sweden, assignor to SCA Projekt Aktiebolag, Matfors, Sweden

Filed Sept. 5, 1973, Ser. No. 394,488

Claims priority, application Sweden, Sept. 18, 1972, 12014/72

Int. Cl. B02c *7/06*

U.S. Cl. 241—38 **2 Claims**

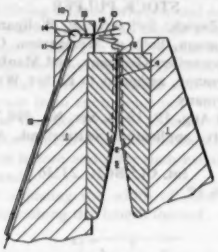
1. Grinding apparatus which comprises

a housing;

a pair of grinding discs, adjacent to and directly in front of each other, in said housing, at least one of which discs is rotatable;

the facing surfaces of which discs are capable of grinding a material;

means for supplying material to be ground to a space between the grinding discs for movement outwardly from within said space through a gap between the discs, ground material exiting therefrom into the surrounding housing; and



means for the separate supply of a treating agent to the ground material said means comprising a passageway system formed in at least one of the grinding discs which is rotatable, for rotation together with said disc;

said passageway system being connected to supply openings located around and immediately outside the circumference of said gap between the grinding discs for supplying treating agent directly into the flow of grinding product upon exiting from said gap.

3,942,730

GRAIN MILLING WHEELS

Robert G. Coucher, Salt Lake City, Utah, assignor to Pioneer Associates, Salt Lake City, Utah

Filed Sept. 3, 1974, Ser. No. 502,831

Int. Cl.² B02C *7/06, 7/18*

U.S. Cl. 241—248 **18 Claims**

14. In a set of milling wheels for home grain mills comprising a rotor adapted for mounting on a driven shaft with the milling surface of the rotor facing out from the end of the shaft and a stator adapted for mounting with its milling surface juxtaposed in registration with the milling surface of the rotor so that the registered milling surfaces together define a central cavity adapted to receive grain from an outside supply and to reduce said grain to grain particles as the rotor turns on its axis and a peripheral interface adapted to grind said particles to flour as they are urged from said central cavity outward by the spinning rotor, the improvement which comprises each wheel being constructed of:

a metal base element approximately the full diameter of said wheel and including that wheel's portion of said central cavity enclosed within a rim with internal crushing structure contained within the cavity and approximately coplaner with said rim and a peripheral shoulder portion recessed with respect to said rim; and

a cast stone ring bonded to said recessed shoulder portion so that the grinding surface of said ring extends to at least the milling surface of said rim but not more than about 0.005 inch beyond said rim.

3,942,731

METHOD AND APPARATUS FOR FORMING RESERVE WINDINGS DURING A BOBBIN CHANGE ON A SPINNING MACHINE

Andre Lattion, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

Continuation-in-part of Ser. No. 376,282, July 5, 1973, abandoned. This application Oct. 21, 1974, Ser. No. 516,576

Claims priority, application Switzerland, July 6, 1972, 10164/72; Dec. 17, 1973, 17624/73

Int. Cl.² B65H *54/02, 67/04*

U.S. Cl. 242—18 PW **25 Claims**

3. An apparatus for forming reserve windings comprising

a holder for removably receiving a tube for winding of a bobbin thereon, said holder being pivotally mounted between an operating position and an idling position above said operating position;

a friction drive drum mounted adjacent said operating position for driving a tube removably mounted in said holder;

a spinning device for supplying a yarn between said friction drive drum and said holder;

a yarn suction means positioned downstream of said friction drive drum relative to the supplied yarn for holding the yarn under suction, said suction means being positioned below said holder and including means in the path of said holder for terminating the suction of said suction means on a held yarn movement of said holder towards said operating position; and

a yarn severing means positioned downstream of said friction drive drum relative to the supplied yarn for severing a yarn held under suction in said yarn suction means to produce a short yarn end, said yarn severing means being positioned below and in the plane of said holder and including means in the path of the holder for actuating said yarn severing means upon movement of said holder towards said operating position to sever a yarn.

3,942,732

THREAD CUTTER FOR WINDING MACHINES AND THE LIKE

Fletcher D. Adamson, Alexander City, Ala., assignor to Russell Corporation, Alexander City, Ala.

Filed Jan. 20, 1975, Ser. No. 542,360

Int. Cl.² B65H *75/32, 63/08*

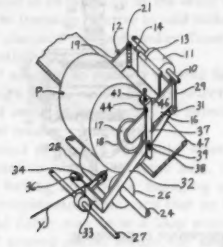
U.S. Cl. 242—19 **2 Claims**

1. The combination with yarn winding apparatus and the like including means to build a package of yarn and means to oscillate the yarn as the package is built thereby to level wind the yarn on the package of:

a. means to cut the yarn while it is being fed to said package, comprising

1. a pivoted arm having an end portion extending beneath the yarn in the area where it is to be cut,

2. yarn severing means carried by said end portion of the arm and comprising
3. a notch in the end of the arm,
4. two stationary knives, one located on one side of the arm and the other on the other side thereof,
5. said knives being located to form with said notch a wedge-shaped opening into which the yarn is pulled



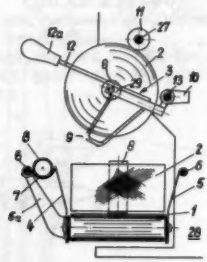
upon oscillation toward the apex of said opening whereby one knife engages and holds the yarn while the other knife cuts the same upon continued and further oscillation of the yarn, and

b. means to raise the knife-carrying end of the arm to place said wedge-shaped opening in yarn receiving position in response to the completion of a yarn package of predetermined diameter.

3,942,733
DEVICE FOR REMOVING FULL BOBBINS ON OPEN-END SPINNING MACHINES

Herbert Hoffmann, Schwanewede, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Mar. 21, 1973, Ser. No. 343,533
Claims priority, application Germany, Mar. 23, 1972, 2214072
Int. Cl.² B65H *54/02*; D01H *9/18*
U.S. Cl. 242—35.5 A **1 Claim**

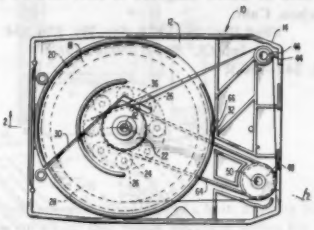


1. In combination with a spooling device of an open-end spinning machine, a device for removing full bobbins, which includes; conveyor means arranged below said spooling device for receiving full bobbins therefrom, protective means arranged laterally of said conveyor means at least where the latter receives a full bobbin from said spooling device for protecting the spooling device and rotating bobbins against accidental interference, said protective means including support means and a pipe attached to said support means and having an axis generally parallel to said conveyor means, guiding plate means arranged on opposite sides of said conveyor means where the latter receives full bobbins from said spooling device, said guiding plate means converging toward said conveyor means for guiding a full bobbin released from said spooling device onto said conveyor means and centering said released bobbin thereon, said guiding plate means having an upper end formed as trough means for receiving and supporting an empty bobbin sleeve, said pipe being fixedly attached to said guiding plate means at the upper end thereof adjacent said trough means, a bobbin frame forming part of said spooling device, and a folding over member projecting downwardly (as to) toward the conveying means and extending below the lowermost portion of a full bobbin held and supported by said bobbin frame, said folding over member extending to a distance from the conveyor means which is less than the height of a full bobbin package for tilting any bobbin leaving said spooling device in approximately upright position moved by said folding over member into lying position so that its axis will be transverse to the longitudinal direction of said conveyor means and substantially parallel to said folding over member.

3,942,734
TAPE CARTRIDGE

E. Dean Morley, 743 Lowton St., McLean, Va. 22101

Continuation of Ser. No. 363,880, May 25, 1973, abandoned.
This application Feb. 12, 1975, Ser. No. 549,368
Int. Cl.² B65H *17/48*
U.S. Cl. 242—55.19 A **1 Claim**



1. A cartridge for an endless magnetic tape, comprising:
a. a housing;
b. a disc mounted within said housing for rotation relative thereto and about a first axis, said disc including rotation imparting means extending from one surface thereof, a hub portion extending from the other surface thereof, said rotation imparting means and said hub portion defining said first axis, and a plurality of tape engaging ribs which extend outwardly from the other surface thereof;
c. tape roll forming means mounted within said housing to be stationary therewith and defining an axis coincident with said first axis, said tape roll forming means including a further disc provided with a slot through which a magnetic tape passes, a hub portion extending from said further disc and defining said coincident axis and a plurality of annularly spaced rollers also extending from said further disc and concentrically arranged about said portion, with the two hub portions forming aligning means for the assembly of said disc and tape roll forming means into a tape reel, and with said rollers forming a hub about which a magnetic tape is spirally wound
c. a first roller mounted within said housing for rotation relative thereto and about a second axis, said roller including tape engaging means;
d. a second roller mounted within said housing for rotation relative thereto and about a third axis, said roller including tape-engaging means and rotation transmitting means;
e. an endless magnetic tape spirally wound into a roll about said tape roll forming means, said tape extending from the inner radius of said tape roll through the slot in said further disc into engagement with the tape engaging

means of said first and second roller to define thereby a predetermined path of travel; and

f. means connecting said rotation imparting means and said rotation transmitting means for imparting rotation to said disc and tape roll in relation to the rotation of said second roller, wherein:

i. said rotation transmitting means comprises an extension of said second roller;

ii. said rotation imparting means and said rotation transmitting means form annular grooves within which said connecting means are received;

iii. the diameter of the annular groove defined by said rotation imparting means is greater than the diameter of said rotation transmitting means'

iv. said second roller exclusive of said rotation transmitting means is formed of rubber;

v. said connecting means is a flexible endless member; and

vi. said ribs have inclined surfaces which increase in height in their extent away from said hub portion such that only a limited portion of the tape roll near the outer radius thereof engages said ribs.

3,942,735

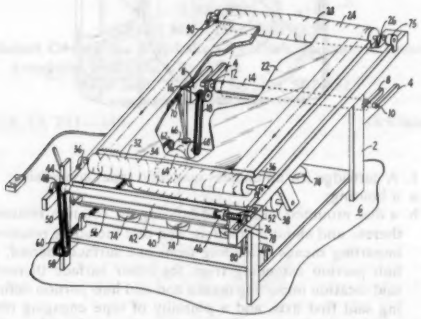
VIEWING TABLE

Douglas R. Marchio, Concord, and Marino J. Marchio, Antioch, both of Calif., assignors to Levi Strauss & Co., San Francisco, Calif.

Filed Dec. 26, 1974, Ser. No. 536,334

Int. Cl.² B65H *19/20, 25/26*

U.S. Cl. 242—56 R **10 Claims**



1. A reviewing and collating machine for drawing a web of material along a predetermined path from a supply roll across a flat reviewing surface and winding it on a batching roll, comprising an upright frame, a supply roll shaft, means for rotatably and removably mounting the supply roll shaft on the upright frame at one end of the predetermined path, a substantially flat reviewing surface supported by the frame, a first self-centering web feed pulley rotatably mounted on the frame between the supply roll shaft and the reviewing surface along the predetermined path of travel of the web of material, a takeup shaft for supporting the batching roll, means for rotatably and removably mounting the takeup shaft on the frame at the other end of the predetermined path, a second self-centering pulley rotatably mounted on the frame between the reviewing surface and the takeup shaft along the predetermined path, means for selectively driving either the takeup shaft to draw the web of material in a forward direction along the predetermined path or the supply shaft to draw the web of material in the opposite direction along the predetermined path, and means for severing the batching roll from the remainder of the web of material.

3,942,736

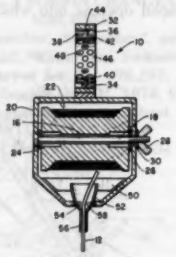
RIBBON DISPENSER

Dennis Ramos, 255 Barham St., Santa Rosa, Calif. 95401

Filed Apr. 18, 1975, Ser. No. 569,364

Int. Cl.² B65H *75/40*

U.S. Cl. 242—96 **9 Claims**



1. A ribbon dispenser comprising:

a frame within which is supported by supporting means a supply of ribbon, said ribbon being dispensible from said supporting means;

a dispensing supply funnel attached to said frame, said ribbon conductible through said funnel;

handle means attached to said frame, said handle means including a member rotatably mounted by a rotation supporting means, whereby a person's finger may be placed upon said member and said frame moved in respect thereto and said frame rotated with said ribbon to be wound about an article of manufacture.

3,942,737

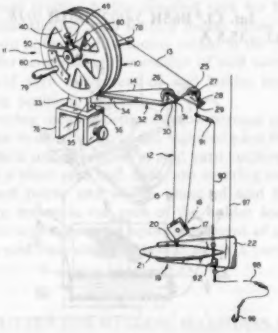
DOWNRIGGER FOR FISHING

Mark V. Luzi, 11224 W. Grange Ave., Hales Corners, Wis. 53130

Filed Dec. 6, 1974, Ser. No. 530,163

Int. Cl.² B65H *75/48*

U.S. Cl. 242—107.1 **18 Claims**



1. A downrigger adapted to operate a cable for selectively raising and lowering a sinker means and for selectively feeding and taking up said cable independently of substantial movement of said sinker means, comprising:

a. first and second reversibly rotatable wheel means constructed and arranged for engaging opposite end portions of a continuous cable for suspending said sinker means translatably on a loop portion of said cable formed intermediate its ends,

b. means for rotating said wheel means individually and jointly, rotation of said wheel means individually and jointly in first opposed directions causing said cable to be fed from one and the other of said wheel means to extend said intermediate portion of said cable between said end

portions for lowering said sinker means on said loop portion, and rotation of said wheel means individually and jointly in second opposed reverse directions causing said cable to be taken up on one and the other of said wheel means for raising said sinker means on said loop portion,

c. rotation of said first and second wheel means jointly in a selected direction causing said cable to be fed from one wheel means and to be taken up by the other wheel means for said cable to translate relative to said sinker to thereby maintain the distance of said sinker from said wheel means substantially constant.

6. A downrigger adapted to operate a cable for selectively raising and lowering a sinker means and for selectively feeding and taking up said cable independently of substantial movement of said sinker means, comprising:

a. first and second reversibly rotatable wheel means arranged for rotation about the same axis, each of said wheel means having means for engaging opposite end portions of a continuous cable such that an intermediate portion of said cable may form a loop portion between said first and second wheel means for suspending said sinker means in a manner that permits said cable to translate relative to said sinker means,

b. means for rotating said wheel means jointly and individually, and means for selectively coupling and uncoupling said first and second wheel means for enabling joint and individual rotation, respectively, of said wheel means,

c. rotation of said wheel means jointly in the same direction causing said cable to be fed from one of said wheel means and to be taken up correspondingly by the other of said wheel means while said cable including said loop portion translates relative to said sinker means for enabling said sinker means to remain at a substantially constant distance from said wheel means,

d. rotation of said wheel means individually in first opposite directions simultaneously and sequentially causing said cable to be taken up by said wheel means to thereby raise said sinker means on said loop portion, and reversing said directions of rotation causing said cable to be fed from said wheel means to thereby lower said sinker means on said loop portion.

3,942,738

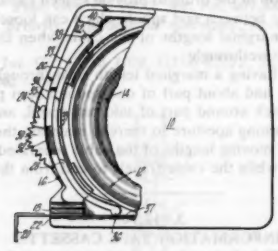
COILABLE RULE

Edward Charles Rutty, Portland, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed Sept. 16, 1974, Ser. No. 506,460

Int. Cl.² B65H *75/48;* **G01B** *3/10*

U.S. Cl. 242—107.2 **4 Claims**



1. In a coilable rule including a casing having a slotted arcuate front wall provided with an opening forming a mouth adjacent the lower edge thereof and a flat bottom wall, a measuring tape blade coilable in the casing, a brake member for releasably holding the tape blade against unintended movement from a desired extended position, said brake member comprising upper and lower arcuate portions with shoes at the ends thereof and an intermediate offset finger piece connected thereto by a necked down web received in the slot of said front wall of the casing to cantilever mount said upper and lower portions on said casing for slideable movement toward and away from the tape blade between locking and unlocking positions and to bias said lower arcuate portion of the brake member into engagement with said tape blade at an acute angle to the coiling direction of the tape to clamp the blade against the flat bottom wall when said brake member is in its locking position, the improvement wherein said upper and lower arcuate portions are mirror images of each other and the shoes thereof project radially outwardly from the ends thereof, respectively, and said front wall further provides a pair of spaced recesses which cooperate with the shoe of the upper arcuate portion to detent the brake in both the locking and unlocking positions thereof.

3,942,739

SAFETY BELT CONSTRUCTION

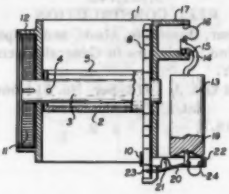
Nils G. Y. Torphammar, and Per G. Torphammar, both of Ostermalmsvagen 6, 61200 Finspong, Sweden

Filed May 23, 1974, Ser. No. 472,534

Claims priority, application Sweden, July 30, 1973, 7310467; May 24, 1973, 7307287

Int. Cl.² B65H *75/48*

U.S. Cl. 242—107.4 A **8 Claims**



1. A safety belt assembly comprising: a belt; a spring biased rotatable drum on which said belt is wound; a spring for biasing said drum to wind said belt thereon; ratchet teeth associated with said drum; a pawl positioned for engagement with said ratchet teeth; and a pendulum coupled to said pawl to move same into locking engagement with said ratchet teeth preventing the belt from being unwound from the drum upon displacement of said pendulum; a lever; said pawl being coupled to said pendulum by said lever, one arm of which engages said pawl, and the other arm of which is subject to movement by said pendulum; said pendulum being formed with a recess at its lower end; said recess having walls converging to an apex; and said lever being formed with a trunnion seating in said recess.

3,942,740

SAFETY BELT RETRACTOR ASSEMBLY

Nils G. Y. Torphammar, and Per G. Torphammar, both of Ostermalmsv, 6, 61200 Finspong, Sweden

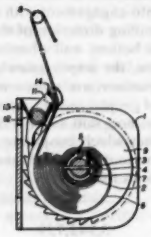
Filed June 12, 1974, Ser. No. 478,596

Int. Cl.² B65H *75/48;* **B60S** *9/00*

U.S. Cl. 242—107.4 B **4 Claims**

1. A safety belt retractor assembly for maintaining a relatively loose tension on a safety belt during normal conditions, but locking the belt when the user is subjected to a sudden movement, said assembly comprising: a rotatable drum on which the belt is wound; a drum biasing spring urging the drum in a belt winding direction; ratchet teeth associated with the drum and rotating therewith; a pivotally mounted pawl movably positioned to engage said ratchet teeth; a pawl bearing spring urging said pawl in a direction out of engagement with said ratchet teeth; a belt guide bar connected to said pawl over which the belt is trained exerting a force opposed to the pawl spring biasing force, said pawl spring having a spring modulus such that it will resist the forces exerted by the belt

as a result of relatively slow belt movement over the belt guide bar, but gives way when the belt is subjected to a sudden pull,



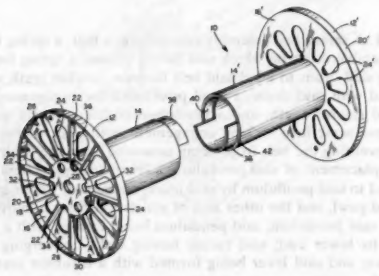
whereby upon a sudden pull on said belt, said pawl will engage said ratchet teeth to prevent drum rotation and lock the belt.

3,942,741

REEL CONSTRUCTION

Joseph Paul Hussar, Dunstable, Mass., and Ralph Albert Jolie, Fort Wayne, Ind., assignors to General Electric Company, New York, N.Y.

Filed Oct. 3, 1974, Ser. No. 511,660
Int. Cl.² B65H 75/14
U.S. Cl. 242—118.7 14 Claims



1. A reel having an elongated cylindrical shaft and a pair of annular rims thereabout, comprising:

a. a shaft;

b. an annular rim extending radially from adjacent each end of the shaft;

c. a flange extending axially outward from adjacent the periphery of each rim;

d. a hub at each end of the shaft extending axially outward from each rim;

e. a plurality of ribs extending radially from the hub to the flange of each rim;

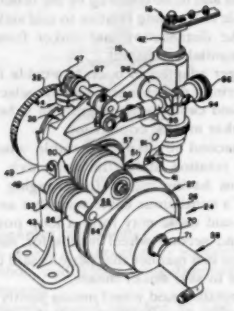
f. said hub having at least one projection extending axially outward therefrom and at least one depression having the same radial spacing from the longitudinal axis of said shaft and the same configuration as said projection, whereby the projections and depressions of like reels are effective for fitting together in a mating relationship to enable stable hub end on hub end stacking of such reels.

3,942,742

CABLE GUIDE MEANS FOR A CABLE DRUM

Harry Boucher, Odessa, Tex., assignor to Gardner-Denver Company, Dallas, Tex.

Division of Ser. No. 386,758, Aug. 8, 1973, Pat. No. 3,842,501.
This application Sept. 16, 1974, Ser. No. 506,620
Int. Cl.² B65H 57/14
U.S. Cl. 242—157 R 7 Claims



1. In a cable driven drum rotatably mounted to drum support structure by a drum shaft and rotated by a cable having opposite moving marginal cable lengths spaced from a central marginal portion which is rove about the drum, the combination with said cable and drum of a cable guide means for separating said opposite moving marginal cable lengths from one another while guiding the cable to and from the drum;

said cable guide means having spaced shafts affixed to the recited support structure and positioned with the longitudinal central axis thereof being parallel to one another and to the drum shaft, and normal to the cable rove about the drum;

a first spool rotatably mounted on a first of said spaced shafts, a second spool rotatably mounted on a second of said spaced shafts, each spool having spaced flanges defining the cable receiving width thereof, and spaced circumferentially extending cable receiving grooves located between said flanges;

said spaced shafts being arranged relative to one another and the support structure and drum such that the flanges of one spool are received in overlapping relationship respective to the flanges of the remaining spool; said grooves of one said spool being positioned respective to the grooves of the remaining spool and to the cable bearing portion of the drum to provide spaced cable receiving apertures between said spools which can loosely capture spaced marginal lengths of the cable when the cable is placed therethrough;

said cable having a marginal length rove through one said aperture and about part of one spool, about part of the drum, back around part of said one spool, and through the remaining aperture to thereby maintain the marginal opposite moving lengths of the cable separated from one another while the cable travels to and from the drum.

3,942,743

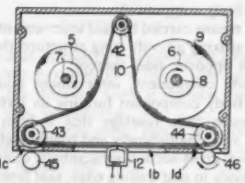
INFORMATION TAPE CASSETTE

Sei Jinsenji, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed July 24, 1974, Ser. No. 491,229
Claims priority, application Japan, July 26, 1973, 48-84648
Int. Cl.² G03B 1/04; G11B 15/32
U.S. Cl. 242—192 8 Claims

1. An information tape cassette for a machine having a tape head and a driving capstan, said cassette comprising a case formed therewith with a first, a second and a third opening,

wherein when the cassette is positioned in the machine said first opening faces the tape head, said second opening faces the driving capstan, and said third opening faces a different possible location for a driving capstan, a pair of cores rotatably disposed in said case and each having means for securing thereto one end of a continuous length of a tape so that the tape can be wound on the cores in roll form and a paid-out portion of the tape can connect the rolls of tape wound on the cores, and an endless belt and means for confining the belt to move along a path in which the belt backs said paid-out portion of the tape and brings said paid-out tape portion into a position in which it faces said first opening of the case so as to be engaged by the head facing said first opening from outside the case when the cassette is positioned in the machine, said belt partially engaging under a predetermined



tension a portion of the outer periphery of each of the rolls of said tape formed on said cores, said confining means comprising a plurality of guide members arranged such that the endless belt trained about said guide members can move along said path, said guide members comprising at least a first and a second rotary roller arranged such that the endless belt is trained over said rollers, with the paid-out portion of the tape being over the belt portions trained on the rollers, and said first and second rollers face and are adjacent to said second and third case openings respectively, said first roller engaging said driving capstan when the cassette is in position in the machine and said second roller being disposed to engage a driving capstan disposed at said different location, whereby the first rotary roller can be driven by said driving capstan and said second rotary roller can be engaged and driven by another driving capstan in the same or a different machine.

3,942,744

MAGNETIC TAPE CARTRIDGE

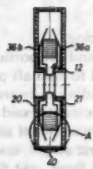
Horst Fitterer, Heidelberg-Hasenleiser; Uwe Woweries, Bad Durkheim; Gustav Loewenberg, Ludwigshafen, and Dieter Gaiser, Diersheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Oct. 19, 1973, Ser. No. 407,887

Claims priority, application Germany, Oct. 21, 1972, 2251746

Int. Cl.² G03B *1/04*; G11B *15/32*, *23/04*

U.S. Cl. 242—199 **14 Claims**



1. A magnetic tape cartridge, especially a compact cassette, with at least one tape winding hub onto which the magnetic tape is wound and/or from which it is unwound, at least two liners being provided, one on each side of the reel of wound tape, between the latter and the lower and upper cartridge walls, respectively, said liners comprising portions, at least one for each liner, which resiliently engage the tape pack, wherein said portions are formed to provide between them at least one guide channel for the outer turns of the tape pack and/or for the tape to be wound or unwound, said channel, at its bottom being delimited by the tape pack itself and having legs defined by said liner portions and angling towards each other in a radially outward direction, and said channel extending substantially between the region where the winding or unwinding tape joins or leaves the pack and the region of intersection of the pack periphery with the transverse center line of the pack, whereby the tape is kept from slipping off the pack.

3,942,745

TAPE REEL DRIVE APPARATUS WITH DRIVING TORQUE CONTROL MECHANISM

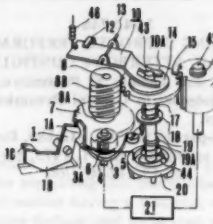
Yasuyuki Ishikawa, Kawaguchi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 1, 1974, Ser. No. 493,842

Claims priority, application Japan, Aug. 2, 1973, 48-87042; Aug. 6, 1973, 48-88148

Int. Cl.² G03B *1/04*; G11B *15/32*

U.S. Cl. 242—201 **16 Claims**



1. In an apparatus cooperating with a reel-to-reel type cassette for driving the winding reel of the cassette through frictional driving engagement with motor drive means to take up a web material contained in the cassette, the improvement comprising, in combination:

a. a first gear assembly including:

1. a first drive shaft connected to said motor drive means, a first rotary drive pinion affixed to said first drive shaft;
2. a guide member arranged to be pivotable on said first drive shaft of said first rotary drive pinion selectively between first and second operative positions; said guide member being pivotally displaced to the first position and to the second position in response to an insertion and to a removal, respectively, of said cassette into and from a chamber adapted to receive the cassette;
3. a first spur gear mounted on said guide member to be rotatable in engagement with said first rotary drive pinion; and
4. a cylindrical sleeve having a helical thread with a certain helical angle on its outer surface coaxially fixedly mounted on said first spur gear for rotation therewith;

b. reel driving means arrange to be brought into engagement with the winding reel of said cassette when it is loaded in the cassette chamber, said reel driving means includes a second drive shaft;

c. a second gear assembly including:

1. a second rotary drive pinion connected to said motor drive means; and
2. a second spur gear engaging said second rotary drive pinion and mounted on said second drive shaft of said reel driving means to be axially movable along the axis thereof as well as to be rotatable about it;

d. slip clutch means for transmitting the motion of said second spur gear to said reel driving means in frictional driving engagement therewith, said slip clutch means including:

1. a frictional disk coaxially affixed to said second drive shaft of said reel driving means, a flanged sleeve affixed to said second drive shaft and spaced thereon from said second spur gear; and

2. a frictional expansion spring means arranged to be compressed between said second spur gear and said flanged sleeve; and

e. a driving torque control member engaging said second spur gear and arranged to be in disengaging relationship with said cylindrical sleeve when said guide member remains in the second position, thereby serving as a means for preventing the second spur gear from being taken out of contact with its shaft under action of said expansion spring means, and to engage in the helical thread of said cylindrical sleeve when it is displaced to the first position, whereby the position of said second spur gear relative to the position of said frictional disk is adjusted by said cylindrical sleeve to impart into said reel driving means constantly changing driving torques dependent upon ever increasing diameters of the core of web material on the winding reel as it winds in, such that the stress on the web material between the reels is maintained constant during the entire cassette operation.

3,942,746

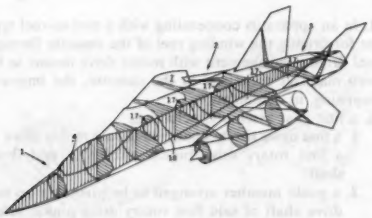
AIRCRAFT HAVING IMPROVED PERFORMANCE WITH BEAVER-TAIL AFTERBODY CONFIGURATION

Glenn T. Carter, and Thomas F. Paniszczyn, both of Fort Worth, Tex., assignors to General Dynamics Corporation, Fort Worth, Tex.

Continuation-in-part of Ser. No. 212,180, Dec. 27, 1971, abandoned. This application Oct. 1, 1973, Ser. No. 402,540

Int. Cl.[2] B64C *1/00*

U.S. Cl. 244—13 14 Claims



1. In a supersonic aircraft having propulsion means, stabilizer fin means and a supersonic configuration fuselage provided with wings extended to opposite sides thereof, the improved fuselage that has a longitudinally and transversely cambered airfoil configuration of high fineness ratio in which the airfoil fuselage extends flat-like substantially continuously from the forebody portion of the fuselage to the trailing edge thereof which comprises:

a supersonically faired fuselage forebody component for accommodating the aircraft crew and for housing conventional apparatus and instruments for operation and control of the aircraft;

a fuselage afterbody component having a beaver-tail-like planform and a longitudinally cambered airfoil cross-sectional profile with a relatively wide, flat-like lateral cross-section for effecting optimum pitch trim while operating in a desired supersonic speed regime;

a fuselage intervenient body component adapted for attachment of aircraft wings thereto and having a longitudinally cambered airfoil cross-sectional profile with a generally flat-like lateral cross-section that flattens progressively from the forebody component towards the rear of the aircraft so as to aerodynamically blend and fair said forebody into said afterbody;

said fuselage forebody component extending from the aircraft nose to about the area of attachment of the forward portion of the wing structure to the fuselage; the intervenient body component extending therefrom aft to about the area of attachment of the rear portion of the wing to the fuselage; and the afterbody component extending therefrom aft to the rearmost edge or tip of the airplane fuselage;

said fuselage intervenient and afterbody components having upper and lower surfaces together forming a substantially smoothly continuous airfoil section extending continuously from said forebody component to the trailing edge of said afterbody component, the upper surface of the fuselage intervenient body component extending as a flat-like substantially constant transverse curvature throughout substantially the full longitudinal extent of the intervenient body component and at least a portion of said afterbody component;

attachment means carried by said intervenient body component for affixing aircraft wing structure thereto so as to extend on opposite sides thereof;

said forebody component, intervenient body component and afterbody component forming an airfoil configured high fineness ratio fuselage that is both progressively flattened and longitudinally and transversely cambered in longitudinal cross-section substantially continuously from said forebody to said trailing edge, said fuselage afterbody component having the lateral edges thereof approximately parallel for the major portion of the length thereof;

whereby at supersonic speed drag resulting from wake turbulence from said fuselage afterbody is largely eliminated and aerodynamic force is gained from said fuselage independent of the aircraft wing structure to thereby reduce trim drag otherwise tending to slow the speed of the aircraft.

3,942,747

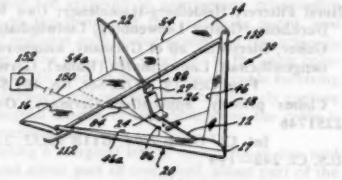
JOINED WING AIRCRAFT

Julian Wolkovitch, 28603 Trailriders Drive, Rancho Palos Verdes, Calif. 90274

Continuation of Ser. No. 318,720, Dec. 27, 1972, abandoned. This application June 24, 1974, Ser. No. 482,226

Int. Cl.[2] B64C *3/00*

U.S. Cl. 244—13 21 Claims



12. An aircraft comprising:

a fuselage having fore and aft portions;

a first airfoil connected to said aft portion of said fuselage, and said airfoil extending outwardly therefrom;

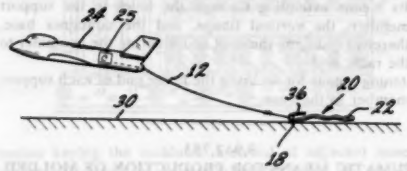
a second airfoil connected to said fuselage at a location spaced forwardly from said first airfoil and at an elevation different from said first airfoil, said second airfoil extending rearwardly away from said fuselage and having extended ends connected to said first airfoil, said first and second airfoils forming a triangular configuration in front elevation view wherein said first airfoil resists lifting loads developed on said second airfoil, said aft portion of said fuselage including a vertically extending member for providing directional stability and to which is mounted said first airfoil.

3,942,748

APPARATUS FOR DISTANCE CONTROL

Julian Wolkovitch, 28603 Trailriders Drive, Rancho Palos Verdes, Calif. 90274

Continuation of Ser. No. 351,307, April 16, 1973. This application Oct. 18, 1974, Ser. No. 515,886
Int. Cl.² B64C 25/32
U.S. Cl. 244—81 13 Claims



1. An apparatus operatively connected to means for controlling a vehicle movable in a fluid, said apparatus being responsive to the distance from a surface over which said vehicle is movable, comprising:

a cable extending from said vehicle and having first and second ends, said first end adapted to operate said vehicle controlling means; and

a sheet member attached to said second end of said cable and movable between two modes, a first low drag mode wherein said sheet member is generally in contact with the surface and generally parallel to a relative wind caused by movement and a higher drag mode wherein said sheet member is spaced from said surface and is inclined to the relative wind,

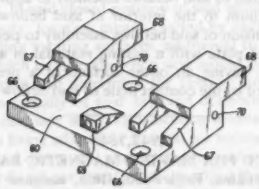
whereby a greater tension is developed in said cable when said sheet member is in its second mode than when it is in its first mode.

3,942,749

DEVICE FOR STEADYING LOADS SUSPENDED FROM AIRCRAFT

Jean Henri Hasquenoph, Lagny, and Pierre Fernand Coutin, Paris, both of France, assignors to R. Alkan & Cie, Valenton, France

Division of Ser. No. 366,054, June 1, 1973, Pat. No. 3,840,201. This application Mar. 7, 1974, Ser. No. 448,952
Claims priority, application France, June 9, 1972, 72.20897
Int. Cl.² B64D 1/00
U.S. Cl. 244—137 R 2 Claims



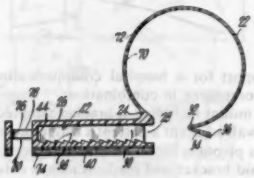
1. Device for steadying loads suspended from aircraft comprising a carrier member being carried by the aircraft, at least one anchoring member being carried by the load, at least one fork-shaped hook pivotally connected to the aircraft and positioned for engaging and supporting said anchoring member, wedge members slideably mounted on said load for movement axially of the load, spring means being carried by said load and tending to move said wedge members between the face of the load and a part of the lower face of said carrier member for ensuring the steadying of the load, and which wedge members can be manually retracted from said carrier member against the action of said spring means.

3,942,750

ADJUSTABLE CLAMP

Peter Noorily, Holliswood, N.Y., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Aug. 13, 1974, Ser. No. 496,978
Int. Cl.² F16L 3/08; B65D 67/02
U.S. Cl. 248—74 PB 8 Claims



1. An adjustable clamp comprising: a generally elongate base portion for supporting said clamp adjacent a given surface, said base portion having a first end, a second end, an exterior mounting surface, and an at least partially enclosed strap receiving chamber therewithin, said chamber extending generally lengthwise between said first and said second ends within said base portion generally parallel to said exterior mounting surface and communicating with said first end of said base portion to provide an entrance end thereat, said chamber being at least partially defined by an upper interior surface, a lower interior surface, and at least one sidewall; a series of teeth selectively disposed within said strap receiving chamber on one of said upper and said lower interior surfaces; a flexible strap portion having a first end and a second end, said strap portion first end being coupled to said base portion directly adjacent said entrance end of said strap receiving chamber, said strap portion second end terminating in a pawl means arranged for selective releasable engagement with said base portion teeth within said strap receiving chamber; and means to permit the attachment of said base portion to a surface; said flexible strap portion being selectively preformed into a loop with said pawl means positioned generally adjacent said entrance end of said strap receiving chamber, said flexible strap portion thus substantially fully encircling an article inserted within said loop prior to closure and restraining the movement of such article upon the engagement of said strap portion pawl means with said base portion teeth, said strap portion being formed integrally with said base portion, said pawl means being hingedly coupled to said strap portion second end for pivotal movement thereat, said clamp being a molded assembly of unitary construction, said pawl means being joined to said strap portion second end by a connecting portion having a reduced cross section to provide increased flexibility thereat, said pawl means further including a heel portion, said heel portion being joined to said pawl means at the junction between said pawl means and said strap portion second end and extending away from said pawl means along a common plane and in a direction opposite to said pawl means and arranged to abut one of said interior surfaces of said base portion chamber remote from said interior surfaces on which said teeth are disposed to increase the locking engagement between said pawl means and said teeth.

3,942,751

MOUNT FOR HOSPITAL COMMUNICATIONS SYSTEM

James P. Fay, Wolf Creek Road, Ranchester, Wyo. 82801

Filed Oct. 18, 1974, Ser. No. 516,033
Int. Cl.² A47F 5/00
U.S. Cl. 248—280 3 Claims

1. A support for a hospital communications system and television comprising in combination:

a. a wall mount including a bracket adapted to be secured to the wall adjacent a patient's bed, a horizontally extending arm pivotally mounted on a transverse horizontal axis onto said bracket and resilient means extending between said bracket and said horizontal arm for resiliently holding said arm in a generally horizontal position;

b. an articulated arm secured to the distal extremity of said horizontally extending arm of said wall mount by a vertically axised pivot and including at least two arm portions pivotally secured together at confronting extremities by a vertically axis pin; and

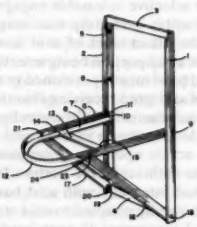
c. a communicator mount including a flanged sleeve for securing the mount at one end to a communicator unit, having signal transmitting means and signal receiving means, and a cylindrical member pivotally secured to said articulated arm by a vertically axised pin, and means coacting between said first and second means for selectively rotating said communicator in a vertical plane through a limited arc greater than 90° and less than 180° for convenient viewing by a reclining or sitting patient.

3,942,752

WALL RACK FOR LIQUEFIED GAS BOTTLES

Don Hartwell Shaw, 4976 E. Stanley, No. 22, Las Vegas, Nev. 89110

Filed Apr. 29, 1974, Ser. No. 464,988
Int. Cl.² F16M 13/00
U.S. Cl. 248—311 R 4 Claims



1. A wall-mountable rack for safely securing a liquefied gas container having a base of substantially circular cross-section to the outer wall of a vehicle under rough road conditions, said base having axially aligned holes in opposite sides thereof, comprising:

a base, attachable to a wall, comprising two vertical rigid members;

a platform attached to and extending horizontally from the base having two spaced parallel angle iron sides with an upwardly directed vertical flange and an inwardly directed horizontal flange, the vertical flange on each side having an axially aligned hole adapted to receive bolt means for securing the base of a liquefied gas container to the platform;

support means for maintaining the platform in the horizontal plane comprising rigid support members extending from each side of the platform downwardly toward the base, each support member having a hole in the upper end thereof axially aligned with the axially aligned holes in the vertical flange of the platform sides;

bolts means extending through the holes in the support member, the vertical flange, and the container base, thereby rigidifying the rack and securing the container to the rack; and

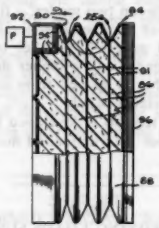
fastening means for securing the lower end of each support member to the base.

3,942,753

PNEUMATIC MEANS FOR PRODUCTION OF MOLDED STRUCTURES

Carrol C. Sachs, 9938 Clybourn Ave., Sunland, Calif. 91352

Division of Ser. No. 378,337, July 11, 1973, Pat. No. 3,831,898, which is a division of Ser. No. 129,039, March 29, 1971, Pat. No. 3,768,769. This application Aug. 16, 1974, Ser. No. 497,950
Int. Cl.² B28B 7/32
U.S. Cl. 249—65 4 Claims



1. A pneumatic bellows assembly for production of molded panels, which comprises a flexible non-permeable corrugated outer member, a plurality of permeable flexible plastic foam segments in said bellows assembly within said flexible outer member and disposed between individual corrugations of said flexible corrugated outer member, a flexible permeable tensioning sheet bonded between and in contact with the adjacent said flexible plastic foam segments, a contact plate mounted on one end of said bellows assembly, and pneumatic means connected to said bellows assembly to apply fluid pressure or a vacuum to the interior of said bellows assembly, whereby expansion of said bellows assembly to permit contact of said contact plate with a casting material in a mold, provides a panel having an outer surface of a predetermined contour formed by the contact plate of said bellows assembly.

3,942,754

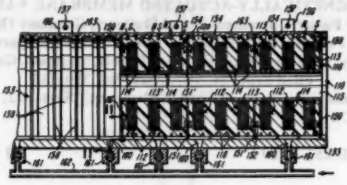
MOLD FOR MAKING MAGNETIC BASE

William A. Jenkins, Englewood, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 448,774, March 6, 1974, Pat. No. 3,885,498, which is a continuation-in-part of Ser. No. 87,673, Nov. 9, 1970, Pat. No. 3,885,497. This application Jan. 23, 1975, Ser. No. 543,382
Int. Cl.² B22D 19/00
U.S. Cl. 249—84 3 Claims

1. A mold assembly for making a circular cylindrical magnetic base having an elongated member and spaced-apart magnetic circuit means disposed on the elongated member, the mold assembly comprising: a plurality a sections arranged to define a generally cylindrical mold cavity, the cavity being capable of receiving the elongated member and the magnetic

circuit means, means forming part of the completed magnetic base for partitioning the cavity into zones, the partitioning means preventing moldable material from flowing from one zone to another during the molding operation, the partitioning

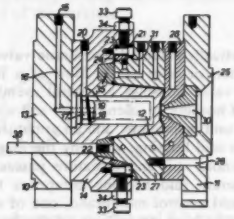


means keying the moldable material of adjacent zones together to provide a unitary magnetic base, and means for selectively introducing moldable non-magnetic material into the empty spaces of the zones by stages.

3,942,755
MOULDS FOR USE ON INJECTION MOULDING MACHINES

Guy Desborough Robinson, Cookham Dene, England, assignor to Pioneer Plastic Containers Limited, Bedfont, Feltham, England

Filed Oct. 9, 1974, Ser. No. 513,306
Int. Cl.² B28B *1/24, 13/04;* **B29C** *7/00;* **B41B** *11/62*
U.S. Cl. 249—162 **6 Claims**



1. A mould for an injection moulding machine, comprising: a pair of mould parts which are movable along an axis towards and away from each other between open and closed positions, said mould parts each having moulding surfaces including side walls which, in said closed position of said mould parts, define a mould cavity; location means carried by each of the mould parts including locating surfaces, additional to said moulding surfaces, which co-operate when said mould parts are in said closed position and determine the relative positions of said mould parts radially of said axis and determine the relative position of said side walls, said location means of one of said mould parts being adjustable thereon for moving said locating surface of said one mould part relative to said side wall moulding surface of said one part to thereby adjust the relative radial positions of the side walls of said moulding surfaces when the mould parts are in said closed position.

3,942,756
EXPANSIBLE TUBE VALVE

Richard S. Brumm, Orinda, and Gary D. Parola, Moraga, both of Calif., assignors to Grove Valve and Regulator Company, Oakland, Calif.

Filed Oct. 21, 1974, Ser. No. 516,179
Int. Cl.² F16K *7/07*
U.S. Cl. 251—5 **4 Claims**

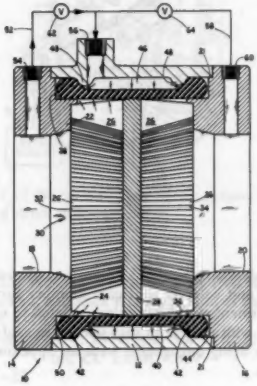
1. An expansible tube valve comprising:

inlet and outlet body end members, each with a flow passage therethrough;

a core of circular cross-section between said end members with opposite open ends thereof aligned with said flow passages;

said core having two axially spaced series of inlet and outlet through openings therearound, a barrier thereacross intermediate said through openings, and a sealing surface around said barrier;

an elastomeric expansible tube on said core having an intermediate sealing portion normally snuggly embracing said sealing surface to block flow and responsive to fluid pressure differential in said flow passages and exterior said elastomeric tube to control flow through said valve; and



a generally cylindrical body tube between said end members around said core and expansible tube;

the improvement comprising:

generally cylindrical bosses on said end members around said flow passages projecting inward toward said barrier; and

an enlarged bead of generally circular cross-section formed on each end of said expansible tube normally moderately compressed radially of said expansible tube between said bosses and said body tube to seal around said tube ends; and

means restricting movement of said tube ends axially inward toward said barrier to retain said beads on said bosses.

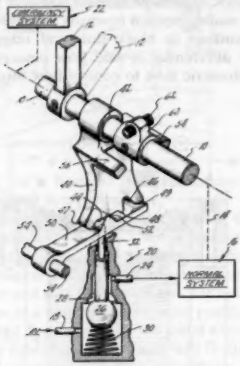
3,942,757
VALVE ACTUATING MECHANISM

Kenneth B. Hansen, Enfield, and Robert K. Olson, Bloomfield, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 10, 1974, Ser. No. 513,584
Int. Cl.² F16K *31/524*
U.S. Cl. 251—78 **5 Claims**

1. The combination comprising a valve including an element movable between open and closed positions, biasing means for urging said element toward one of said positions, a poppet having an inner end movable with said valve element and an outer end, means for moving such poppet against the force of said biasing means, a rock shaft which is rotatable on its axis through a normal range of angular displacements and through a predetermined angular displacement to a second range of angular displacements, said means for moving said poppet including a cam member rotatably mounted on said shaft and having a free end portion which defines a cam surface, at least two segments of said cam surface having differ-

ent radii with respect to said shaft axis, a crank arm carried by said shaft and including screw means for engaging a first abutment surface on said cam member to rotate it together with said shaft beyond said predetermined angular displacement, said cam surface being so located with respect to said poppet that said cam surface segments permit said valve ele-



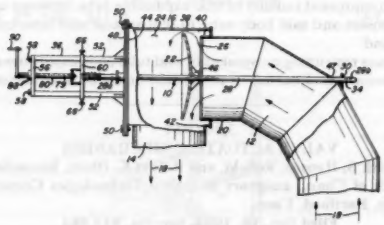
ment to be selectively held in an open and in a closed position respectively, and wherein said cam member further includes a second abutment surface angularly related to said first abutment surface with respect to said shaft axis, said second abutment surface being engageable with an opposite end of said screw means.

3,942,758

DAMPER VALVE

James Ju Luan Ma, Hacienda Heights, and Yaacov Goland, Culver City, both of Calif., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Oct. 9, 1974, Ser. No. 513,458
Int. Cl.² F16K *25/00*
U.S. Cl. 251—85 **7 Claims**



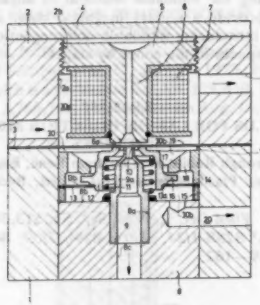
1. A valve assembly comprising: a valve member movable to selectively open and close a conduit and being carried by an elongated valve stem; an actuating assembly adapted to selectively control the movement of said valve member and including, a plurality of elongated guide means extending parallel to said valve stem, a movable transverse member extending between said guide means and slidable therealong, an actuating rod means communicating with said movable transverse member for selective positioning of said movable transverse member along said guide means, and biasing means communicating between said valve stem and said movable transverse member for biasing said valve member toward the closed position thereof and for providing a lost motion connection between said first transverse member and said valve stem after said valve member initially makes contact with such conduit.

3,942,759

MAGNETICALLY-ACTUATED MEMBRANE VALVE

Walter Passera, deceased, late of Stuttgart, Germany (by Ludwig Passera, sole heir), and Heinz Gand, Stuttgart, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sept. 24, 1973, Ser. No. 399,933
Claims priority, application Germany, Sept. 22, 1972, 2246574
Int. Cl.² F16K *31/06*
U.S. Cl. 251—129 **22 Claims**



20. A magnetically-actuated membrane valve for the control or regulation or both of the flow of a liquid medium comprising: a valve housing; a control membrane held in position in said housing; a solenoid coil and a magnetic core on one side of said membrane; and an armature on the other side thereof, in said housing, whereby the magnetic flux between the solenoid coil and armature passes through said membrane wherein said housing comprises two chambers separated by said control membrane, one of said chambers communicating with an entry bore of the housing and the other of said chambers communicating with at least one discharge bore of the housing, said control membrane comprises throttle means, and said two chambers of said housing on both sides of said control membrane are in free communication with one another through said throttle means.

3,942,760

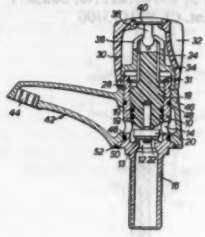
VALVES

Victor Howard George King, Ilford, England, assignor to Barking Brassware Co., Ltd., Barking, England

Filed June 19, 1974, Ser. No. 480,712
Int. Cl.² F16K *31/50, 31/60*
U.S. Cl. 251—267 **13 Claims**

1. A fluid flow control valve comprising in combination a hollow valve body with a fluid inlet and a fluid outlet, a valve seating in the valve body between the fluid inlet and the fluid outlet, a valve member that co-operates with the valve seating to control fluid flow from the fluid inlet to the fluid outlet, the valve member being mounted in the valve body in screw threaded engagement therewith, an intermediate member, the valve member being engaged with the intermediate member for rotation therewith, the intermediate member being in snap-on engagement with the valve body whereby rotational but not axial movement of the intermediate member relatively to the valve body is permitted, an operating handle for rotating the intermediate member, and for retaining the latter in snap-on engagement with the valve body, leak preventing

means located within the valve body for preventing the leakage of fluid between the valve member and the valve body,



and a releasable retainer for securing the operating member to the intermediate member.

3,942,761

4-(2'-NORBORNYL)-2-BUTANONES

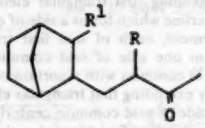
Alfred A. Schleppnik, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 103,878, Jan. 4, 1971, abandoned. This application Nov. 16, 1973, Ser. No. 416,541

Int. Cl.² A61K *7/46;* **C11B** *9/00*

U.S. Cl. 252—522 **4 Claims**

1. In the method of preparing a fragrance composition, the step comprising incorporating therein an odoriferous amount of a compound of the formula



wherein R^1 is hydrogen or methyl and R is hydrogen or a lower alkyl group containing from 1 to 8 carbon atoms.

3,942,762

WINCH FOR SAILING SHIPS

Marc Reymond, 128 rue Bergson, 4200 Saint-Etienne-Loire, France

Filed May 17, 1974, Ser. No. 471,055

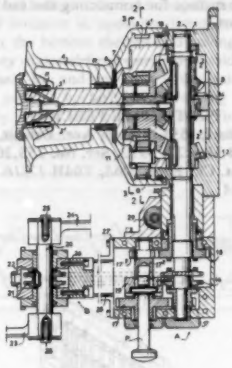
Claims priority, application France, May 18, 1973, 73.18813

Int. Cl.² B66D *1/30*

U.S. Cl. 254—150 R **11 Claims**

9. A winch comprising;

a housing, a control shaft rotatably mounted in said housing, a winch head mounted for rotation relative to the housing, gear means coupled with said shaft and with said winch head, and drive means coupled with said shaft to rotate the same in opposite directions, said gear means being rotatable in opposite directions by said shaft and being constituted to provide unidirectional rotation of said winch head at different speeds corresponding to the direction of rotation imparted to the gear means by said shaft, said drive means comprising a first rotary drive means, a second rotary drive means in driving engagement with said first drive means, pre-selectable first and second drive trains coupled with the shaft to apply relatively different speed ratios to said shaft, and selector means for moving said second rotary drive means into selective driving engagement with one or the other of said drive trains whereby said shaft can be driven in opposite directions at two different speeds depending on the engagement of the second rotary drive means with the first or second drive train.



3,942,763

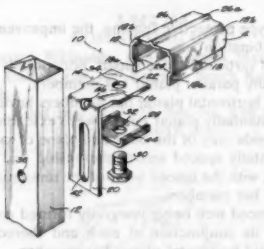
ADJUSTABLE WROUGHT IRON RAILING ASSEMBLY

Arlen Helterbrand, and Zack H. Logan, both of Louisville, Ky., assignors to A-T-O Inc., Willoughby, Ohio

Filed Feb. 4, 1974, Ser. No. 439,333

Int. Cl.² E04H *17/14*

U.S. Cl. 256—22 **1 Claim**



1. A clamp-on type connector means for a wrought iron railing section adapted to be connected with a fixed support and which includes rail elements having an inverted, generally U-shaped cross-sectional construction with the opposed sides of such section being formed with continuously extending, internally positioned abutment means, said sides terminating in freely extending, depending edge portions, comprising an L-shaped clip adapted to be fitted to an end of a rail element with a first of its leg portions extending within the end thereof in engaged, seated relation with the abutment means contained in said rail element and with its second leg portion depending from the end of the rail element, a separate, U-section bearing plate adapted to be positioned along the underside of the rail element with the sides of the U extending towards the rail element and fitting immediately outboard of the corresponding free end portions of said side walls of the rail element, said first leg portion of the clip containing an internally threaded aperture and said bearing plate containing an aperture and adapted to be positioned lengthwise of said rail element with the aperture contained therein in vertically aligned relation with the aperture in said first leg portion of said clip and a threaded fastener means adapted to be inserted

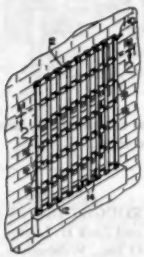
through said apertures to connect said bearing plate to said clip and operative when tightened into place to draw said plate and clip into firm, frictionally engaging relation with said rail element, said second leg portion of the clip presenting a separate attachment surface for connecting the rail element with said fixed support.

3,942,764

PROTECTIVE FENCING

Elmer J. Beversdorf, 1551 Infantry Ave., Detroit, Mich. 48209

Filed May 22, 1972, Ser. No. 255,203
Int. Cl.[2] E06B *3/68*; E04H *17/16*
U.S. Cl. 256—24 5 Claims



1. In grille-type protective fencing, the improvements comprising in combination

a plurality of vertically spaced apart, horizontally extending, substantially parallel planar bar members,

each of said horizontal planar bar members having a plurality of substantially planar lanced webs extending laterally from one side only of the body and plane of said member in horizontally spaced apart relationship and in vertical alignment with the lanced webs of the remaining horizontal planar bar members,

each said lanced web being integrally formed and continuous from its conjunction at each end thereof with the body of said horizontal planar bar member,

a plurality of intermediate vertical planar bar members engaged with said horizontal planar bar members within said planar lanced webs,

the bodies of said horizontal planar bar members lying substantially in a first plane, said intermediate vertical planar bar members lying substantially in a second plane substantially parallel to and ajdacent said first plane, and said horizontally extending planar lanced webs lying substantially in a third plane substantially parallel to and adjacent said second plane,

each said lanced web forming a vertical space for reception of each said vertical bar member therewithin,

said space being sufficient to receive and pass said vertical bar member with very slight "play" between each said vertical bar member and each said horizontal bar member,

each of said intermediate vertical planar bar members having their end portions engaging and embracing the top and bottom horizontal planar bar members, and lateral vertical framing members fixedly secured to the ends of said horizontal planar bar members at each lateral side of said fencing to form a substantially rectilinear fencing unit.

3,942,765

STATIC MIXING APPARATUS

Angus V. Henrickson, Golden, Colo., assignor to Hazen Research, Inc., Golden, Colo.

Filed Sept. 3, 1974, Ser. No. 502,871
Int. Cl. B01f *15/00*
U.S. Cl. 259—4 R 16 Claims

1. A motionless mixing apparatus comprising in combination:

a. a tubular body;

b. a motionless mixing element disposed within said tubular body in fluid flow intercepting relation, said mixing element comprising:

1. an elongated member having a plurality of alternately oppositely extending first triangular elements from a common centerline which forms a side of each said first triangular element, each of said first triangular elements lying on one side of said common centerline having a side in common with a portion of the sides of two oppositely extending first triangular elements lying on the other side of said common centerline, whereby said laterally extending first triangular elements are in axially staggered and overlapping relation, and

2. a plurality of second triangular members each having one apex on said common centerline and each having a side in common with a first triangular element, each of said second triangular elements lying in a plane angularly related to the first triangular element with which it has a side in common.

3,942,766

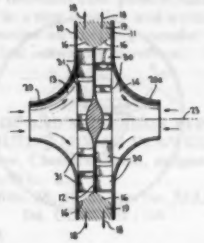
PROCESS AND ARRANGEMENT FOR PRODUCING A STRONG TURBULENCE IN AT LEAST ONE FLUID OR QUASI-FLUID MEDIUM

James R. Lage, Rinikerstrasse 107, 5222 Umiken, Switzerland

Continuation-in-part of Ser. No. 449,482, March 8, 1974, abandoned. This application Nov. 18, 1974, Ser. No. 524,964
Int. Cl.[2] B01F *5/00*
U.S. Cl. 259—4 12 Claims

1. A process for producing a strong turbulence in at least one fluid or quasi-fluid medium including the steps of, guiding the medium for stream flow along at least two confined and adjacent stream paths without intermingling, rotating the two streams in opposite directions within their respective stream paths so as to cause the flow components of the two streams to be directed opposite to one another, and causing the streams to laterally graze each other within a discharge chamber as the streams begin to move outwardly of their paths, the streams being suddenly brought into contact with each other within the discharge chamber whereupon intensive movements of the medium particles develop transversely to the flow directions along fictitious planes of contact between the two

streams as the result of a delay in speed of the flow components of the streams directed opposite one another, whereby



a strong turbulence develops with a most intimate mixing of the two streams.

3,942,767

METHOD AND APPARATUS FOR CONTINUOUSLY AUTOMATICALLY CONTROLLING THE WATER CONTENT OF KNEADED VISCOUS MATERIALS

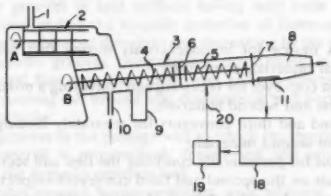
Keiji Hanzawa, Sapporo; Yoshiyuki Takahashi, Aikawa; Nobuyoshi Suga, Kawasaki; Tojo Kato, Atsugi; Makoto Handa; Hiromichi Hayashi, both of Sapporo; Shinichi Taneya, and Toshimaro Sone, both of Tokyo, all of Japan, assignors to Snow Brand Milk Products Co., Ltd., Hokkaido and Anritsu Electric Co., Ltd., Tokyo, both of, Japan

Division of Ser. No. 264,570, June 20, 1972, Pat. No. 3,841,610. This application Feb. 4, 1974, Ser. No. 439,636

Claims priority, application Japan, Aug. 25, 1971, 46-65006; Aug. 25, 1971, 46-65007

Int. Cl.[2] B01F *3/10*

U.S. Cl. 259—7 **1 Claim**



1. A method of continuously automatically controlling the water content of a kneaded viscous material, comprising introducing a feed material into a pressure-kneading portion of a kneader with a slightly insufficient water content, adding salt-free water to said material being kneaded in said pressure-kneading portion to increase the water content to a predetermined level, discharging the kneaded material from the kneader, continuously measuring the water content of the kneaded material being discharged near the exist of said kneader and automatically controlling the quantity of salt-free water to be added to the pressure-kneading portion in accordance with the measured value, thereby to maintain the water contained in the kneaded material constant.

3,942,768

MOBILE MIXER

William Felix Hughes, Belmont, Australia, assignor to Hughes Steel Products Pty. Ltd., Belmont, Australia

Filed July 19, 1974, Ser. No. 491,551

Int. Cl.[2] B01F *7/08, 15/02*

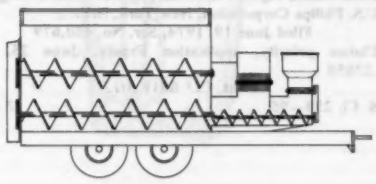
U.S. Cl. 259—21 **3 Claims**

1. A material mixer comprising:

an elongated substantially trough shaped bin having side and end walls, said side walls sloping downwardly and inwardly to form a central longitudinal channel at the bottom of said bin;

a first pair of horizontally extending augers mounted rotatably for rotation in opposite directions within said bin adjacent the bottom thereof and having flights arranged to convey material from one end of said bin to the other end of said bin and upwardly within said bin;

a second pair of horizontally extending augers mounted rotatably within said bin above said first pair of augers spaced apart further than said first pair of augers, the



augers of said second pair being adapted for rotation respectively in the same direction as the respective underlying auger of said first pair and to convey material from said one end of the bin to said other end;

a hammer mill mounted adjacent said one end of said bin in communication therewith;

a recessed channel extending between said bin and hammer mill to provide said communication therebetween;

said first pair of augers extending from said bin into said hammer mill for the conveyance of material from said hammer mill into said bin to the said other end thereof; and means for rotating said first and second pair of augers.

3,942,769

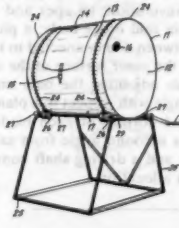
COMPOSTING UNIT

Peter Maurice Whiteside, and Desmond Maxwell Westlake, both of Unit 2, Lot 125 Balcatta Beach Road, Hamersley, Australia

Filed Jan. 31, 1974, Ser. No. 438,395

Int. Cl.[2] B01F *9/02*

U.S. Cl. 259—81 R **1 Claim**



1. A composting unit comprising a stand, a substantially cylindrical container being mounted in an elevated position on said stand for rotation about a substantially horizontal axis, means for effecting manual rotation of said container, a door being provided in the cylindrical wall of said container through which material to be composted can be loaded into and composted material discharge from said container, a fly proof aeration drain unit being fitted to the wall of said container through which any excess liquid can discharge when said unit is in the lowermost position and through which air can pass into said container and at least one fly proof discharge vent being positioned in at least one wall of said container remote from said aeration drain unit so that air can flow through said container, said seration drain unit comprising a

dome shaped member being mounted over a recess formed in the wall of said container, the walls of said domed shaped member being provided with a series of perforated openings and the lower edge of said domed shaped member being provided with a series of castellations through which liquid can drain from said container into said recess and said recess being covered by a fly wire mesh member.

3,942,770

DEVICE FOR STIRRING A LIQUID

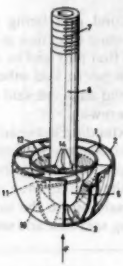
Christian Belouet, Le-Plessis-Robinson, and Jacques Charles Louis Bunel, Vigneux-sur-Seine, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 19, 1974, Ser. No. 480,679

Claims priority, application France, June 25, 1973, 73.23050

Int. Cl.² B01F *5/12*

U.S. Cl. 259—95 **3 Claims**



1. A device for stirring a liquid, comprising an outer cup-shaped body having inner and outer surfaces of revolution about an axis, an apex and a base end opposite to the apex, and having an opening therethrough at said apex for the passage of liquid to be stirred; an inner cup-shaped body having an outer surface of revolution, an apex and a base end, disposed coaxially within said outer body; a plurality of blades extending radially between and connected to the outer surface of the inner cup and the inner surface of the outer cup, a first portion of each blade adjoining the base ends of said cups extending at a first angle with respect to a plane perpendicular to said axis, a second portion of each blade closer to said apices extending at a secoond angle from said plane greater than said first angle; and a driving shaft connected coaxially to said inner body at a location.

3,942,771

ARRANGEMENT IN A SILO FOR BULK MATERIAL

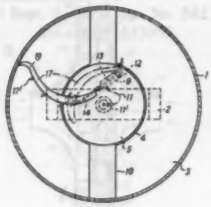
Roald Willies Knutsen, Stolsvigen, Hisoy, N-4800, Arendal, Norway

Filed Oct. 17, 1974, Ser. No. 515,610

Int. Cl.² B01F *7/20*

U.S. Cl. 259—107 **6 Claims**

1. In an arrangement in a silo for bulk material, a rotating agitator comprising a disc mounted adjacent the bottom of the silo for rotation about a vertical axis, and at least one rigid paddle means being shaped generally as an arc having a radius of curvature substantially corresponding to the distance of the axis of rotation of the disc from the pivot of the paddle, said paddle means being pivotally mounted as a two-armed lever on the disc for swinging motion about an axis which is offset from said vertical axis, both arms of the lever being fully exposed to the contents of the silo; and actuating means tending to swing said paddle towards its radially extending position against the reactive pressure from the contents of the silo.



3,942,772

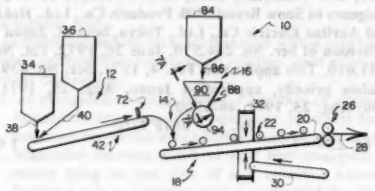
TECHNIQUE FOR MIXING GRANULAR MATERIALS

Carl K. Smith, Mathis, Tex., assignor to Mid-Continent Pipeline Equipment Company, Houston, Tex.

Filed Apr. 5, 1974, Ser. No. 458,304

Int. Cl.² B28C *1/16*

U.S. Cl. 259—148 **29 Claims**



1. A device for homogeneously mixing first and second granular materials comprising

a first conveyor for receiving and conveying a mixture of the first and second materials;

second and third conveyors for separately feeding the first and second materials;

means for peripherally confining the first and second materials on the second and third conveyors respectively into first and second streams of equal width and complimentary predetermined cross-sectional shapes providing a substantially constant proportion of the first and second materials at all locations across the stream widths;

the second and third conveyors being positioned for laterally aligning and delivering the streams in juxtaposed gravity influenced paths toward the first conveyor; and

means for mixing the first and second materials at a location above the first conveyor during falling movement thereof toward the conveyor.

3,942,773

METHOD AND APPARATUS FOR EXTRUDING MELTED PLASTIC MIXTURES

Desider G. Csongor, 35 Wilson Road, Bedford, Mass. 01730

Division of Ser. No. 273,190, July 19, 1972, Pat. No. 3,836,127. This application July 8, 1974, Ser. No. 486,379

Int. Cl.² B29B *1/06*

U.S. Cl. 259—191 **6 Claims**

1. An apparatus for extruding a mass of melted plastic material, including, in combination, a cylindrical enclosure body for receiving the plastic material, an extruder screw mounted for rotative movement in the enclosure body for advancing melted material along the enclosure body in a

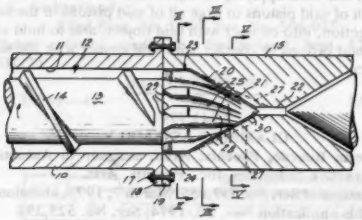
helical path of flow, and flow-diverting means located within the cylindrical enclosure body for interrupting the helical path of flow and moving the melted mass through short restricted passageways in a turbulent flow pattern, said flow-diverting means consisting in a ring member and a plurality of spaced apart vanes supported on the ring member and extending radially inwardly and outwardly therefrom.

3,942,774

METHOD OF AND MEANS FOR EFFECTING REDISTRIBUTIVE MIXING IN AN EXTRUDER

Nickolas N. Sokolow, Cheshire, Mass., assignor to Beloit Corporation, Beloit, Wis.

Filed Feb. 28, 1975, Ser. No. 553,979
Int. Cl.² B29B 1/06
U.S. Cl. 259—191 **18 Claims**



1. Means for effecting redistributive mixing in an extruder including a barrel within which a helical extruder screw rotates to advance thermoplastic material toward a corotative torpedo having a downstream end portion and operating within a generally complementary wall defining a passage in a stationary discharge head at the downstream end of the barrel and leading into a small diameter orifice outlet, the improvement comprising:

transfer grooves in said torpedo having inlet ends at the upstream end of the torpedo receptive of thermoplastic material advanced thereinto and therealong by the screw;

said torpedo grooves progressively diminishing in cross sectional flow area from their inlet ends to downstream ends running out toward said downstream end portion of the torpedo;

feeder grooves in the passage wall to which the thermoplastic material is progressively transferred and propelled from the torpedo grooves; and

said feeder grooves having upstream ends adjacent to the inlet ends of the torpedo grooves and extending therefrom in progressively increasing cross sectional flow area to downstream ends adjacent to said downstream ends of the torpedo grooves from which the plastic material advances to said outlet.

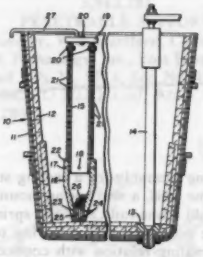
3,942,775

SUBMERGED DESULPHURIZATION DEVICE AND METHOD

Micheal Donald LaBate, 115 Hazen Ave., Ellwood City, Pa. 16117

Continuation-in-part of Ser. No. 347,557, April 2, 1973, abandoned. This application July 29, 1974, Ser. No. 492,485
Int. Cl.² C21C 7/00
U.S. Cl. 266—34 T **6 Claims**

1. In combination: a refractory lined, apertured ladle for containing a molten metal; means to open and close the aperture of the ladle; a refractory lined rod extending within the ladle and terminating in an enlarged end section at a lower end portion of the ladle; consumable container means carried by the rod at said enlarged end section, said container means comprising a material consisting essentially of about 125 to 135 lbs. of a material selected from the group comprising dolomite and limestone, from 8 lbs. to 16 lbs. of a material selected from the group comprising wood chips, wood flour, and rice hulls, and from 4 lbs. to 12 lbs. of an oil class hydrocarbon resin binder and catalyst for the binder; and an addition agent in said container means for known, predetermined rate of release into molten metal in the ladle to treat the molten metal as the container means is consumed at a known, predetermined rate in the molten metal.



3,942,776

UPHOLSTERY COIL SPRING

Harry Lee Jenkins, Hickory, and Bobby Dean Wright, Conover, both of N.C., assignors to E. R. Carpenter Company, Inc., Richmond, Va.

Filed Dec. 23, 1974, Ser. No. 535,743
Int. Cl.² F16F 3/04
U.S. Cl. 267—97 **10 Claims**

1. An upholstery coil spring comprising

a tempered resilient wire forming a plurality of interconnected turns including a top turn, a plurality of intermediate turns and a bottom turn,

said top turn extending upwardly from the rear of the spring at a given angle to the horizontal,

a second turn located immediately below the top turn and having a helical form, said second turn being inclined upwardly from the rear of the spring at an angle which is less than said given angle of the top turn,

said intermediate turns being located below the second turn, and said base turn being a flat turn for resting on a support surface.

3,942,777
SEAT SPRING MEMBER

Jack C. Mandusky, and Neville L. Riddle, both of Lexington, Ky., assignors to Hoover Ball and Bearing Company, Saline, Mich.

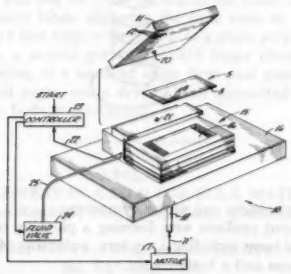
Filed Nov. 18, 1974, Ser. No. 524,350
Int. Cl.² F16F 3/02
U.S. Cl. 267—102 11 Claims

1. In a seat spring assembly for a seating structure having front and rear frame rails, a seat spring mounted on and extending between said frame rails, said seat spring being of one piece formed wire construction and having torsion bars arranged in an alternating relation with connecting bars, said bars being relatively arranged so that said spring has a fish-mouth shape front portion comprised of a lower section which extends rearwardly from said front rail and terminates in a juncture torsion bar and an upper section which extends upwardly and forwardly from said juncture torsion bar and terminates in a mounting torsion bar, said upper section including a connecting bar formed integral with one end of said mounting torsion bar and located in a vertical plane on one side of said lower section, said spring having a main body portion which extends rearwardly from said mounting torsion bar and a rear portion mounted on said rear frame rail, said main body portion including a connecting bar formed integral with the other end of said mounting torsion bar and located in a vertical plane on the other side of said lower section so that on deflection of said spring assembly said connecting bars formed integral with said mounting torsion bar will move in a clearance relation with said lower section.

3,942,778
AUTOMATIC CONTOUR-CONFORMING SUPPORT PALLET

Dario J. Fadiga, and Reynaldo C. T. Soderman, both of Buena Park, Calif., assignors to Quality Research Engineering Corporation, Buena Park, Calif.

Filed Feb. 14, 1975, Ser. No. 549,960
Int. Cl.² B25B 1/24
U.S. Cl. 269—26 6 Claims



1. An automatic contour-conforming pallet for supporting an object comprising:

a plurality of elongate pistons;

first and second support plates, each having a plurality of parallel, spaced-apart holes therein, one hole for each of said pistons, the respective holes in said support plates being aligned, said support plates supporting said pistons in parallel, spaced-apart relationship for independent axial movement relative thereto, the diameter of each of said holes in said support plates being slightly greater than the diameter of each of said pistons;

a sealing member positioned between said first and second support plates, said sealing member consisting of a thin sheet of flexible sealing material having a plurality of parallel, spaced-apart holes therein, aligned with said holes in said first and second support plates, the diameter of each of said holes in said sealing member being slightly less than the diameter of each of said pistons to form a fluid-tight seal between said sealing member and said pistons;

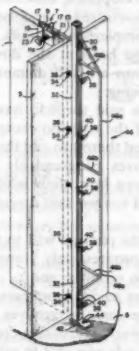
means defining a chamber on one side of said sealing member, first ends of said piston being movable in said chamber; and

means for conducting fluid under pressure into said chamber, said fluid applying an equal force to said first ends of each of said pistons to urge all of said pistons in the same direction, into contact with said object, and to hold each of said pistons in contact with said object with the same force.

3,942,779
CLAMPING ASSEMBLY

John Lorin Bourdo, Phoenix, Ariz., assignor to Automated Construction Industries, Inc., Phoenix, Ariz.

Continuation of Ser. No. 337,155, March 7, 1973, abandoned.
This application Nov. 20, 1974, Ser. No. 525,294
Int. Cl.² E04G 21/16
U.S. Cl. 269—41 6 Claims



1. A member for clamping one wall section to a second wall section in the manufacture of a structure, said clamping member comprising:

a base adapted to be removably attached to a supporting surface;

an elongated upright support member having an upper end and a lower end and said lower end of said support member being held by said base for positioning said support member generally perpendicular to said supporting surface; said support member having attached thereto at least one jaw movable toward and away from said support member in directions generally perpendicular to the long axis of said support member;

a clamping assembly including vise means coupled to a connecting means and said connecting means also being in movable engagement with said support member at a point located generally at said upper end; and

said connecting means having a rod like member attached to said vise means and having means laterally extending

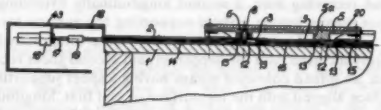
from said rod to contact said support member, and said support member having an opening adapted to permit said rod like member to prevent said laterally extending means from freely passing through said opening; whereby, when a first wall is to be joined to a first surface of a second wall said upright support member is positioned alongside a second surface of the second wall, said vise means grips said first wall, said connecting means extends over said second wall for engaging said upright support means, and said movable jaw is moved against said second surface of said second wall for urging said first and second structural walls into engagement.

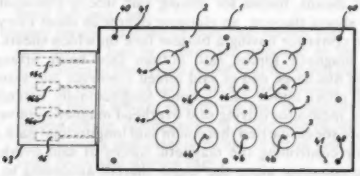
3,942,780

APPARATUS FOR SECURING A WORKPIECE TO BE MACHINED ON A MACHINE

Gilbert-Louis Clement, Semeac, France, assignor to Infranor S.A., Switzerland

Filed Sept. 16, 1974, Ser. No. 506,025
Claims priority, application Switzerland, Sept. 17, 1973, 13331/73
Int. Cl.² B23Q 1/00
U.S. Cl. 269—47 13 Claims





1. Apparatus for securing and registering a workpiece with respect to a tool machine, comprising;

a tool machine table having a plurality of openings; a workpiece support plate disposed on and parallel to the table and having a plurality of bores at locations matching those of the openings of the table; means for interchangeably securing the workpiece support plate to the table to secure a workpiece thereto, comprising, a plurality of locking pins each axially displaceable in one of the bores in the workpiece support plate and downwardly into and through one of the openings in the table and having a lower portion with an annular groove below the table, a spring for each locking pin disposed above the table to bias the pin upwardly;

a locking plate for each locking pin, disposed below the table in the region of the respective opening, slanting in a predetermined direction relative to the table and having a slot extending in said direction whose edges can engage the annular groove of the locking pin, said slot having an enlarged portion adjacent the table for releasing the locking pin, each locking plate having slide means rigid therewith and disposed to guide the plate along the underside of the table, and a rod secured to said slide means, below the table for reciprocably sliding the plate in said direction between a first position in which the respective locking pin has its lower end in the enlarged portion of the slot and a second position in which the groove of the pin is engaged by the edges of the slot and the pin is drawn down against the bias of the spring; and

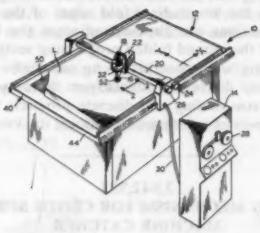
actuator means lateral of the workpiece support plate for axially, reciprocably moving the rods to move the locking plates along the underside of the table, thereby to move the locking pins in directions through the workpiece support plate and thus to interchangeably secure the workpiece support plate to the table.

3,942,781

PENETRABLE SUPPORT

Heinz Joseph Gerber, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., East Hartford, Conn.

Filed July 22, 1974, Ser. No. 490,416
Int. Cl.² B23Q 3/00; B26D 7/00
U.S. Cl. 269—289 R 6 Claims



1. In combination in a machine having a cutting tool which penetrates through a material in a work operation, the improvement comprising:

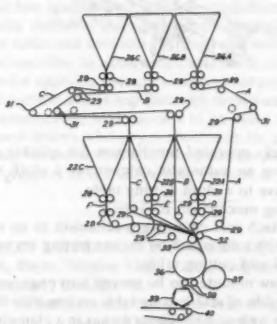
a penetrable bed for supporting the material under the tool during the work operation and having a plurality of flexible, elongated members supported at their base ends in side-by-side and closely packed relationship with the opposite, free ends bearing enlarged heads lying substantially in a common plane to define a support surface of the bed.

3,942,782

COMPENSATING FORMER FOLD

Carl J. Hermach, Genoa City, Wis., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Mar. 15, 1974, Ser. No. 451,516
Int. Cl.² B41F 13/58
U.S. Cl. 270—6 1 Claim



1. A method of assembling thick newspapers consisting of a plurality of separate sections to form a completed newspaper of generally uniform thickness at high production speeds including the steps of, directing a plurality of newsprint webs simultaneously through printing and folding apparatus, combining said webs to form at least a first and a second separately

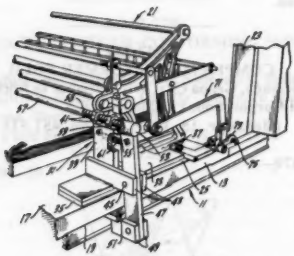
progressing web set, forming a plurality of first progressing sections from said first web set by slitting said first web set along longitudinal, parallel lines, forming a plurality of second progressing sections from said second web set by slitting said second web set along longitudinal, parallel lines, folding each one of the first progressing sections along a longitudinal center line to form first folded progressing sections having a longitudinal fold edge and a longitudinal open edge, folding each one of the second progressing sections along a longitudinal center line to form second folded progressing sections having a longitudinal fold edge and a longitudinal open edge with the longitudinal fold edge of said first folded progressing sections being oriented opposite with respect to the longitudinal fold edge of the second folded progressing sections, combining all of said first and second folded progressing sections into a single progressing web assembly with the first folded progressing sections alternating with the said second folded progressing sections whereby the longitudinal fold edges of the first folded progressing sections are disposed adjacent the longitudinal open edges of the second folded progressing sections, cutting said progressing web assembly along successive lateral cut lines to separate discrete products from the ensuing web assembly, and cross-folding said discrete products to form finished newspapers of substantially uniform thickness.

3,942,783

CLAMPING MECHANISM FOR CLOTH SPREADING MACHINE CATCHER

William E. Neef, and Easton O. Marshalleck, both of Chicago, Ill., assignors to Hart Schaffner & Marx, Chicago, Ill.

Filed June 26, 1974, Ser. No. 483,370
Int. Cl. B65h 29/46
U.S. Cl. 270—30 **9 Claims**



1. A remotely operated mechanism for quickly clamping and unclamping an automatic catcher for a cloth spreading machine relative to a cloth cutting table,

said clamping mechanism including:

means to attach said clamping mechanism to an automatic catcher with said attaching means resting on and engaging top of said cutting table,

a movable jaw mounted to be moved into engagement with the underside of said cutting table on one side thereof, to cooperate with said attaching means in a clamping action, and

means operable from the opposite side of said cutting table for moving said movable jaw into and out of clamping engagement with said table,

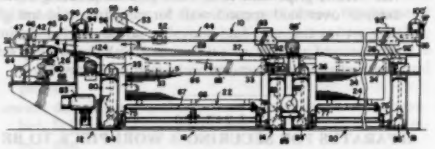
said movable jaw being attached to the lower end of an arm which is pivotally mounted for rotation about a horizontal axis.

3,942,784

DUAL SHEET PILING MACHINE

Velio S. Bucciconc, Portage, Ind., assignor to Bucciconi Engineering Co., Inc., Gary, Ind.

Filed Nov. 13, 1974, Ser. No. 523,418
Int. Cl.² B65H 29/30, 29/70, 31/24
U.S. Cl. 271—64 **18 Claims**



2. A machine for handling metal sheets of material responsive to magnetic forces, said machine comprising an elongate upright frame structure arranged to provide longitudinally aligned and spaced first and second sheet receiving areas each adapted to accommodate at substantially the same level a plurality of sheets in stacked relation, a first longitudinally extending conveyor means having a sheet supporting top surface arranged to advance sheets received thereon in a longitudinal, forwardly inclined path for deposit in said first sheet receiving area, a second longitudinally extending conveyor means having a sheet supporting top surface arranged to advance sheets received thereon in a longitudinal, forwardly inclined path for deposit in said second sheet receiving area, an infeed conveyor means having a sheet supporting top surface aligned with the top surface of said first, longitudinally extending conveyor means at the entrance thereto and positioned to deliver sheets to said first longitudinally extending conveyor means, means for driving said infeed conveyor to advance sheets thereon, an elongate overhead sheet carrying magnetic conveyor having a bottom face on which sheets are held by magnetic forces, said bottom face being arranged above the discharge end of said infeed conveyor and extending to a point above said second longitudinally extending conveyor, means for driving said overhead magnetic conveyor to advance sheets carried thereon in said longitudinal path and means for controlling the magnetic forces of said overhead magnetic conveyor along the length thereof according to the length of the sheet conveyed so as to enable sheets of varying length to be selectively delivered by the infeed conveyor to said first longitudinally extending conveyor for deposit in said first sheet receiving area, or to said overhead magnetic conveyor for advance to said second longitudinally extending conveyor for deposit in said second sheet receiving area.

3,942,785

SELF-ACTUATING SHEET INVERTER REVERSER

Klaus K. Stange, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 25, 1974, Ser. No. 527,109
Int. Cl.² B65H 29/60
U.S. Cl. 271—65 **1 Claim**

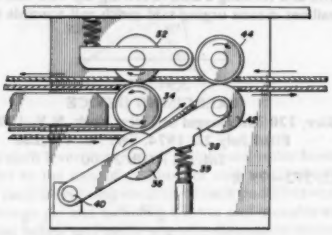
1. A self-actuating sheet inverter-reverser including first and second rolls forming a first roll pair to receive sheets transported to the inverter-reverser, said first roll being driven in a sheet forwarding direction, said second roll being freely rotatable for co-action therewith;

a second roll pair formed adjacent said first roll pair adapted to feed sheets in a reverse direction;

a third roll pair downstream from said first and second roll pair, said third roll pair comprising an idler roll and a cooperating driven roll adapted to feed sheets in the same direction as said second roll pair;

lever means adapted for pivotal movement about a predetermined pivot point, one of the rolls of said first roll pair and one of the rolls of the third roll pair being mounted on said lever means, the roll of said first roll pair being mounted between the roll of said third roll pair and said

pivot on said lever, movement of a sheet between said first roll pair causing said first roll pair to move apart a distance equal to the thickness of the sheet passing therebetween and pivot said lever means to separate the rolls of said third roll pair a distance greater than the thickness of the sheet to prevent pinching the sheet therebetween, movement of the trailing edge of the sheet from between the rolls of said first roll pair allowing the rolls of said third roll pair to move together into contact with the sheet therebetween and drive the sheet into the rolls of the second roll pair to feed the sheet in the reverse direction;



a time delay drive mechanism adapted for drivingly connecting the drive shaft for the driven roll of said third roll pair and said driven roll, said time delay mechanism comprising a plurality of driving lugs affixed to the drive shaft of the driven roll of said third roll pair;

a plurality of driven lugs mounted on the driven roll of said third roll pair; and,

biasing means adapted to bias said driven lugs away from said driving lugs in a direction opposite to the direction of rotation of the driven roll of said third roll pair, engagement of the rolls of said third roll pair causing said driving lugs to move toward said driven lugs in opposition to said biasing means, disengagement of the rolls of said third roll pair allowing said biasing means to move said driven lugs away from said driving lugs.

3,942,786

SHEET LAYING APPARATUS

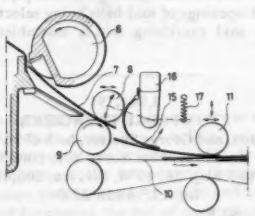
Unto Antero Lauren, 05, Karhula, Finland, assignor to A. Ahlstrom Osakeyhtio, Finland

Filed Aug. 9, 1971, Ser. No. 170,114

Claims priority, application Finland, Aug. 18, 1970, 2268/70

Int. Cl.[2] B65H *29/68*

U.S. Cl. 271—177 **1 Claim**



1. In a sheet laying apparatus having a cutter for cutting sheets from a travelling web, a laying station for receiving the sheets in stacked order, and means for conveying the sheets from the cutter to the laying station, the improvement which comprises a pair of rollers driven at a peripheral velocity at least equal to the travelling velocity of the web, a conveyor driven at a velocity lower than the peripheral velocity of said rollers, and guide means, said pair of rollers being positioned to grip each successive sheet cut from the web and to advance the sheet onto said conveyor, said guide means being positioned to engage the sheet advanced by said rollers and deflect the trailing edge of the sheet toward the conveyor to enable the leading edge of the next following sheet to pass over the trailing edge of the preceding sheet whereby the sheets are placed upon the conveyor in overlapping relation for conveyance thereby to the laying station, at least one of said drive rollers being adjustable for varying the sheet throwing direction, said guide means being adjustable automatically in connection with the drive rollers.

3,942,787

SHEET FEEDING APPARATUS FOR PRINTING PRESSES

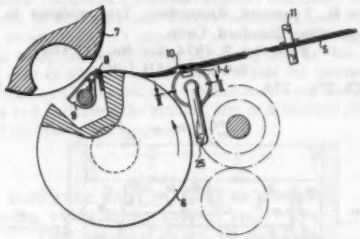
Hans Bernhard Bolza-Schlinemann, Wurzburg, Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Germany

Filed June 4, 1974, Ser. No. 476,190

Claims priority, application Germany, June 15, 1973, 2330484

Int. Cl.[3] B65H *9/00, 5/06*

U.S. Cl. 271—237 **4 Claims**



1. In a sheet feeding apparatus useable for feeding sheets to the continuously rotating impression cylinder of a sheet-fed rotary printing press, and including a feed table having spaced front lays and side pull-type lays, a suction conveying device for grasping the sheets from the feed table and transferring the sheets to the grippers of the impression cylinder, the suction conveying device comprising:

at least two spaced apart rotary suction drums affixed on an axially shiftable shaft positioned generally beneath the feed table and between the front and side lays;

means operable to axially shift said shaft; and

means for applying vacuum to an interior portion of each of said suction drums together with means on said drums for communicating said vacuum to an outer surface of each of said drums whereby a sheet may be grasped by said rotary suction drums and forwarded for engagement with the grippers of the impression cylinder.

3,942,788

SHEET MATERIAL TRANSPORT EQUIPMENT

Robert A. Boyle, Mission Viejo, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed June 13, 1974, Ser. No. 479,008

Int. Cl.[2] B65H *9/04, 5/22*

U.S. Cl. 271—250 **8 Claims**

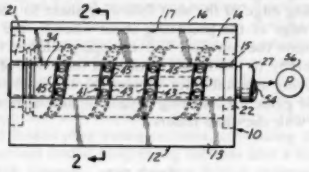
3. An apparatus for advancing a sheet of material comprising in combination:

a rotary member having a longitudinal axis;

means including projecting propelling means on said rotary member for advancing said sheet in a direction extending essentially in parallel to said longitudinal axis;

means for applying said sheet to said projecting propelling means; and

means for rotating said rotary member whereby to advance said applied sheet;



said rotary member having apertures at said projecting propelling means; and

said applying means including means for drawing air through said apertures whereby said sheet is drawn against said propelling means.

3,942,789

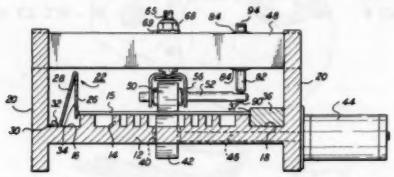
UNIFORM PRESSURE DISTRIBUTING SELF-LEVELING PINCH ROLL FOR MAGNETIC CARD TRANSPORT SYSTEM

Robert H. Townsend, Richardson, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 7, 1974, Ser. No. 512,580

Int. Cl.² B65H *5/06*

U.S. Cl. 271—274 **9 Claims**



1. A card transport system comprising a card support member having a top surface, an opening in said member extending through said top surface, a drive roll supported for rotation about an axis which is generally parallel to said top surface and having a portion thereof extending into said opening with a plane tangent to the periphery thereof being substantially coplanar with said top surface, means for driving said roll, a shaft extending in a direction generally normal to said top surface and having an annular flange at the lower end thereof, a pinch roll support member operatively connected to said shaft and comprising a U-shaped bracket forming a pair of spaced legs extending from a closed end, an opening in said closed end through which said shaft extends, a portion of the closed end of said bracket engaging a portion of said flange, said portions of said bracket and said flange being so constructed to form an axis about which said shaft and said bracket can relatively move, said axis being generally normal to said shaft, a pinch roll mounted on said legs for rotation about an axis generally normal to said rocking axis and generally parallel to said top surface, said pinch roll being located above said top surface opposite said drive roll and forming a card receiving nip with said drive roll, and resilient means urging said pinch roll towards said drive roll.

6. A card transport system comprising a card support member having a top surface, an opening in said member extending through said top surface, a drive roll supported for rotation about an axis which is generally parallel to said top surface and having a portion thereof extending into said opening with a plane tangent to the periphery thereof being substantially coplanar with said top surface, means for driving said roll, pinch roll support means connected to said card support member, a first vertical shaft rotatably connected to said pinch roll support means, a pinch roll mounted on the lower end of said first shaft for rotation about an axis transverse to said first shaft, a transversely extending arm operatively connected to said shaft for rotating the same, a second vertical shaft rotatably mounted on said pinch roll support means and laterally spaced from said first shaft, a portion of the lower end of said second shaft engaging a portion of said arm, said portions of said arm and said second shaft being so constructed and arranged to rotate said first shaft in opposite directions during rotation of said second shaft in one direction, said pinch roll being located above said top surface opposite said drive roll and forming a card receiving nip with said drive roll, and resilient means urging said pinch roll towards said drive roll.

3,942,790

EXERCISING DEVICE

Max Rice, 120 MacDougal St., New York, N.Y. 10012

Filed July 22, 1974, Ser. No. 490,226

Int. Cl. A63b *21/00*

U.S. Cl. 272—79 R **1 Claim**

1. An exercising bar, comprising in combination, a plurality of three pipe sections and a pair of end balls, and means for removable engagement of said pipe sections and end balls together; said pipe sections being made of a light weight metal and an outer surface thereof is coated with polytetrafluoroethylene material, so to have a characteristic of allowing hands grasping the same to slide along an axis of said bar, all said pipe sections being cross sectionally round and of a same diameter, a first of said pipe sections being integral with a threaded screw protruding axially from each opposite end thereof, while a second and third of said pipe sections each is integral with a threaded screw protruding axially from one end thereof and an opposite end has a threaded opening, each said end ball being made of a plastic material, being spherical in configuration and having a polished surface, said balls being of a larger diameter than a diameter of said pipe sections and each said ball having a radially extending threaded opening; said threaded screws and openings of said pipe sections and said threaded openings of said balls being selectively engagable whereby said exercising bar is assembled in variable length.

3,942,791

TWIN PEDAL ENERGIZER

John D. Dawson, and George Spector, both of 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

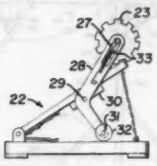
Filed Aug. 26, 1974, Ser. No. 500,478

Int. Cl.² A63B *23/04*

U.S. Cl. 272—83 R **2 Claims**

1. A foot pedal exerciser comprising a base plate with a bracket secured thereto having a horizontal hinge pin mounted therethrough spaced from and adjacently parallel to said plate, said braket being secured to the midpoint of the pin, including a pair of pedals pivotally mounted on the pin, symmetrically on both sides of the braket in further combination with a pair of springs coiled about the pin having terminal portions contacting the pedals and the plate biasing the pedals

to open positions whereby the free ends of said pedals are at a maximum distance from the plates, including tension members connecting the pedals and the plates restricting movement of said free ends to said maximum distance, said members offering no resistance to closing movement of said pedal free ends, in further combination with a lever pivotally secured to each pedal, including a compressible roller rotatably



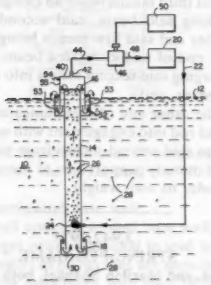
secured to each lever above each pedal, said roller having an axis parallel to the axis of rotation of said pedal about said hinge pin, each lever being secured to each pedal between the roller and hinge pin and including a lower end movably engaging said base below said pedal whereby downward movement of the pedal causes the lever to pivot and move the roller along the pedal.

3,942,792

PROCESS AND APPARATUS FOR MEASURING DISSOLVED GAS

George J. Topol, Gaithersburg, Md., assignor to Biospherics Incorporated, Rockville, Md.

Filed Apr. 18, 1974, Ser. No. 461,972
Int. Cl.² G01N 7/00
U.S. Cl. 273—19 **13 Claims**



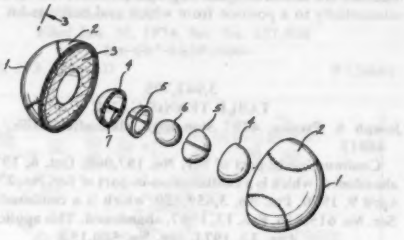
7. A system for measuring the amount of gas dissolved in a body of liquid which comprises a hollow, vertical column which is at least partially immersed in said body of liquid and at least partially open at the bottom end thereof so that it is in communication with said body of liquid and a means at the top end thereof for closing the end of said column to contact with the surrounding environment, means for creating a recirculating gas system which is closed to the atmosphere and to said body of liquid which includes means for passing a gas into the lower portion of said column and means for withdrawing gas from the top of said column, thus creating a gas-lift effect within said column that circulates liquid from said body through said column and means for measuring the amount of a particular gas contained in the recirculating gas.

3,942,793

BASEBALL

Gus F. Lombardo, St. Louis, Mo., assignor to International Sporting Goods, Inc., St. Louis, Mo.

Filed July 25, 1973, Ser. No. 382,292
Int. Cl.² A63B 69/40, 37/04
U.S. Cl. 273—26 R **3 Claims**



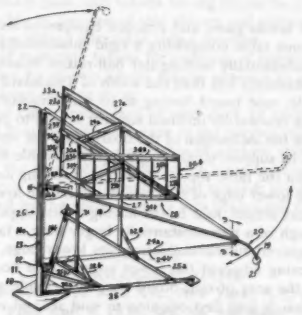
1. In a baseball incorporating as components thereof a central core surrounded by wound yarn and having an outer cover, said components jointly having an overall weight of over 5 ounces but not in excess of 5¼ ounces, the improvement which comprises a weighted member embedded within the center of said core and thereby increasing said overall weight an additional 0.5 ounce to 16 ounces, said weighted member being formed of metal and being smaller than said central core in which it is embedded so that the increase in said overall weight enables said baseball to be used for toning muscles and perfecting the pitching arm of a baseball player, without sacrificing pitching control.

3,942,794

BASEBALL BATTING PRACTICE DEVICE

Tim Gowins, 10034 Antrim, Laporte, Tex. 77571

Filed Apr. 5, 1974, Ser. No. 458,232
Int. Cl.² A63B 69/40
U.S. Cl. 273—26 E **6 Claims**



1. A baseball batting practice device comprising; a base structure having an elongated upright standard mounted thereon, said standard having intermediate its ends means mounting one end of an elongated pole thereon such that said pole is rotatable in a substantially horizontal plane about said standard, said pole having elongated and slightly flexible extension means on its outer end mounting a ball; a frame structure mounted on said base adjacent said standard and positioned a distance from said standard such that said pole will be engaged with said frame structure upon rotation in said horizontal plane; means mounted on said frame structure for engagement with said pole to cause said pole to rotate in the opposite direction after said means on said frame is engaged

by said rotating pole; means on said standard for pivotally supporting one end of said pole for pivotal movement in a substantially vertical plane to allow said pole to be raised or lowered to a desired height of a batter and said pole will engage said means mounted on said frame when said ball is hit in one direction and will also engage said means mounted on said frame when said ball is hit in the direction opposite said one direction, each engagement of the pole with said means mounted on said frame causing said pole and ball to return substantially to a position from which said ball was hit.

3,942,795

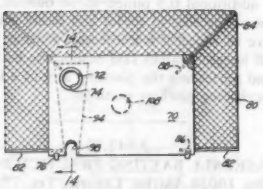
TABLE TENNIS GAME

Joseph A. Psenka, 4797 Stoneleigh, Bloomfield Hills, Mich. 48013

Continuation-in-part of Ser. No. 187,000, Oct. 6, 1971, abandoned, which is a continuation-in-part of Ser. No. 27,125, April 9, 1970, Pat. No. 3,659,850, which is a continuation of Ser. No. 615,816, Feb. 13, 1967, abandoned. This application Aug. 23, 1974, Ser. No. 500,153

Int. Cl.[2] A63B *39/00*

U.S. Cl. 273—30 **3 Claims**



1. Table tennis game and practice equipment for use with a table tennis table comprising a rigid substantially upstanding, and substantially rectangular ball-return board having a width substantially less than the width of a standard size table tennis table, said board having at its rear adjustable downwardly and rearwardly inclined support means to provide for variation in the inclination of the board from the vertical, said board and its support means being freely movable to different positions on the table top, soft energy absorbing and friction feet on the lower edge of said board and on the lower part of said support means, said board having a first upper opening therethrough of a size substantially larger than a table tennis ball and spaced substantially from its lower edge, a second lower opening adjacent the lower edge of said board, guide means at the rear of said board shaped to guide a ball projected through said first opening to said second opening to expel the ball forwardly therefrom to roll along the table top to return it to a player, and net means mounted on said board to extend laterally from both side edges, upwardly from the top edge, and upwardly and outwardly from the corners thereof, said net means comprising net supporting posts projecting laterally from the bottom of the side edges of the board, and upwardly and outwardly extending net supporting posts at the upper corners of said board, mounting sockets associated with the board for receiving the inner ends of the net supporting posts, said net being tensioned to provide for resilient return of balls projected against the net and to urge the upwardly and outwardly extending posts inwardly of their sockets and to frictionally lock the laterally extending posts in their sockets.

3,942,796

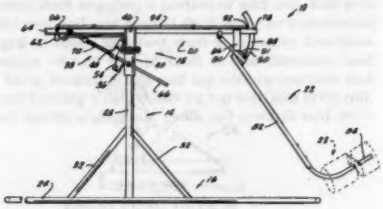
FOOTBALL PRACTICE BLOCKING AND TACKLING REACTION MACHINE

Ronald S. Bowen, R.R. No. 1, Valley Center, Kans. 67147

Filed Oct. 15, 1973, Ser. No. 406,256

Int. Cl.[2] A63B *69/00*

U.S. Cl. 273—55 R **5 Claims**



1. A football reaction practice machine, comprising:
a. a base,
b. an upright post member mounted on its lower end to said base,
c. an elongated beam mounted intermediate its ends on the upper end of said upright member for rotational movement in a generally horizontal plane and for pivotal movement in a generally vertical plane,
d. an elongated dummy support arm having one of its ends pivotally mounted on one end of said beam for movement therewith and for movement in a generally vertical plane, said dummy support arm having an elongated upturned outer end portion, said upturned outer end portion having a padded tackling dummy mounted thereon,
e. first means on said elongated beam and second means mounted on said dummy support arm; said first and second means cooperatively engaging to hold said dummy support arm in a raised position, third means mounted on said beam for disengaging said first and second means to release said support arm for movement to a lowered position, said third means being an elongated rod member movable along said beam, said second means being a latch member and said first means being an edge portion of said one end of said elongated beam,
f. means for urging said second means into engagement with said first means, and
g. means at the other end of said elongated beam operable to move said rod into engagement with said second means to disengage said second means from said first means to permit said dummy support arm to move to said lowered position under its own weight.

3,942,797

STRING-PEG GAME

John C. Shankel, and Marilou Shankel, both of San Francisco, Calif., assignors to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

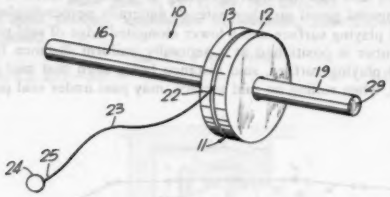
Filed Mar. 14, 1975, Ser. No. 558,331

Int. Cl.[2] A63B *71/02*

U.S. Cl. 273—97 R **3 Claims**

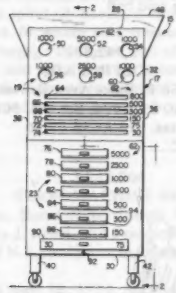
1. A string game, which comprises:
a. a circular disc member having a threaded longitudinal center bore continuous therethrough;
b. an elongated string member communicating with said disc member;
c. a cylindrically shaped peg member having an externally threaded surface at one end thereof, said one end of said peg member threadably engaged into said bore of said disc member, said peg member extending outwardly from one side of said disc member;
d. a cylindrically shaped handle member having an externally threaded surface at one end thereof, said one end of

said handle member threadably engaged into said bore of said disc member, said handle member extending outwardly from another side of said disc member, said handle member being longer than said peg member; and



e. a ring member affixed onto a free end of said string member whereby the user may hold the handle with one hand and the free end of the string with his other hand and thin flick the string in an attempt to lasso the peg with the string.

3,942,798
DISC TOSSING GAME
Dale H. Koski, 5 Russell Road, Apt. 4, Alexandria, Va. 22301
Filed Apr. 30, 1975, Ser. No. 573,074
Int. Cl.² A63B 71/02
U.S. Cl. 273—103 **10 Claims**



1. An amusement apparatus used in conjunction with projectiles thrown toward the apparatus, the combination comprising:

a substantially horizontal base wall;

an upstanding wall coupled to said base wall;

a plurality of target orifices located in said upstanding wall at which a plurality of projectiles are sequentially thrown;

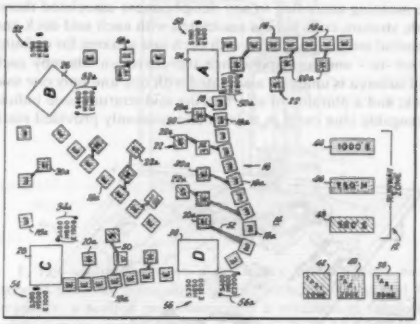
point value indicia associated with each of said target orifices;

a plurality of projectile receiving means, located above said base wall and below said target orifices, for receiving the projectiles passing through said target orifices, each one of said plurality of receiving means being associated with at least one of said target orifices;

channel means for selectively conducting projectiles passing through said target orifices from each of said target orifices into the receiving means associated therewith; and

a plurality of drawer means, each for slidably supporting at least a part of one of said plurality of projectile receiving means between a first position wherein said part of said receiving means is on a first side of said upstanding wall and can receive a projectile from said channel means, and a second position wherein said part of said receiving means at least partially extends past the second side of said upstanding wall and projectiles therein are visible, each of said drawer means having point value indicia associated therewith corresponding to the point value indicia associated with the target orifice associated with the receiving means slidably supported thereby.

3,942,799
BOARD GAME APPARATUS
Richard G. Cory, Laurelton, N.Y., assignor to Corwin Games, Inc., North Bellmore, N.Y.
Filed Jan. 30, 1974, Ser. No. 437,936
Int. Cl.² A63F 3/00
U.S. Cl. 273—134 AD **9 Claims**



1. A board game apparatus for a plurality of players comprising in combination:

a playing board, a plurality of relatively large equal playing areas on said board, a course positioned between said large areas divided into a plurality of parallel paths, each said path being divided into a plurality of relatively small equal playing areas with a different number of said small areas in each said path;

a plurality of each of a plurality of distinctive tokens constituting playing pieces for the respective players, each distinctive token adapted to be used in a corresponding identifiable path, said tokens having means for indicating ownership by any one of said players and means for concealing a player selectable indica thereon;

a group of monetary tokens for payment of rewards to and penalties by players whose tokens advance to said relatively large playing areas;

a deck of cards, each card of said deck of cards having indicia thereon with reference to the playing rules which indicate, respectively, ownership of a token, starting of a token, the number of small playing areas to be moved by a player's token and penalties and rewards to be paid or received by the player coming into possession thereof.

3,942,800
ARCHEOLOGICAL GAME
Dwight Holbrook, 1158 Fifth Ave., New York, N.Y. 10029
Filed Apr. 9, 1975, Ser. No. 566,440
Int. Cl.² A63F 3/04
U.S. Cl. 273—135 AB **8 Claims**

1. An archeological game apparatus for a plurality of players to simulate the finding of an ancient buried civilization comprising a game board having a map delineated thereon representing an archeological location in which information associated with said ancient buried civilization is located, said maplike area being partitioned into a plurality of distinguishably coded contiguous subareas each representing a stratum of a different historical age; a plurality of indicia bearing fragment cards locatable at predetermined locations in each of said distinguishably coded subareas and arrangable at said locations in randomly arranged stacks for selection thereform; said plurality of fragment cards comprising a plurality of dis-

tinguishably coded decks, a portion of the cards in each respective deck having inscribed thereon symbols representing encrypted language indicia of a first type, said symbols collectively defining an ancient language uniquely associated with said respective deck, said language indicia of the first type thereby defining a unique encrypted language for each of said distinguishable decks; at least one decipherment for each of said encrypted languages assigning meaning to the symbols belonging thereto; a portion of the cards in each of the respective decks which bear said first type of indicia further having thereon a second type of confusing indicia comprising symbols resembling the encrypted language indicia of said first type borne by said cards but unrelated thereto and having no sensible meaning according to any decipherment associated therewith; stratum code indicia associated with each said deck and identical indicia associated with each said subarea for defining a one -to - one correspondence therebetween whereby each said subarea is uniquely associated with one and only one said deck; and a plurality of also bearing said stratum code indicia arrangable clue cards in at least one randomly provided stack

for selection therefrom, said clue cards containing indicia for decrypting said encrypted language symbols contained on said fragment cards including indicia relating to the genuine meaning of said language symbols and evidence of the association between said language symbols and said ancient civilization, said clue cards having at least one code thereon corresponding to a particular stratum code, said clue cards being cooperatively associated only with those fragment cards having said same stratum code thereon, said clue cards and fragment cards being cooperatively associated in order to initially determine the language of said ancient civilization from said plurality of different languages and for subsequently decrypting a predetermined quantity of said fragment cards in said initially determined language to translate the language symbols thereon in said initially determined language, said ancient civilization being found when said predetermined quantity of fragment cards is translated and identified by said clue cards as genuinely belonging to said ancient civilization, said lanugage to be initially determined being randomly variable from game to game dependent on the random arrangement and selection of said clue and fragment cards.

3,942,801

GOLF GAME APPARATUS

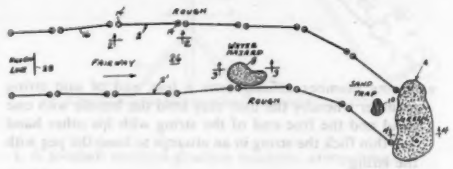
Nathan Louis Mintz, 10612 Cavalier Drive, Silver Spring, Md. 20901

Filed Sept. 9, 1974, Ser. No. 504,360

Int. Cl.[2] A63B *69/36, 67/02*

U.S. Cl. 273—176 AB **5 Claims**

1. Apparatus for playing a game of golf wherein the golf ball is moved over a playing surface by kicking same comprising a golf ball, a plurality of portable boundary forming members adapted to be positioned on a playing surface to define the boundaries of a golf course fairway, each of said boundary forming members including an elongated lightweight panel having a predetermined length and height for forming an elevated elongated barrier to said ball, a base member adapted to rest on a playing surface, means for supporting said panel on said base member in an elevated position thereon so that when said base member is resting on a playing surface, said elongated panel member extends generally perpendicular to said playing surface and a lower elongated edge of said panel member is positioned at a generally uniform distance from said playing surface, said distance being such that said golf ball, when rolling on said surface, may pass under said panel



at substantially any location along the length thereof for affecting the score of the player, and the height of said panel being such that said golf ball may be kicked from a playing surface over said panel by a player for also affecting the score of a player, and a portable mat simulating the appearance of a golf green and including an opening in the upper surface thereof for receiving said ball.

3,942,802

GOLFING AID

Gary C. Wright, 1450 E. Bates Ave., Denver, Colo. 80210

Filed Sept. 23, 1974, Ser. No. 508,234

Int. Cl.[2] A63B *69/36*

U.S. Cl. 273—186 C **8 Claims**

1. A golfing aid adapted to assist a golfer in hitting a golf ball toward a preselected target with a golf club comprising in combination:

a base,

a substantially straight elongated rod pointing along the intended line upon which said club is to be swung,

support means interconnecting the base and the rod to retain the rod in an elevated position relative to the ground, and

means permitting said rod to be selectively moved relative to said support means between a first use position wherein said rod is inclined upwardly and outwardly in a forward direction so as to point slightly outside a line extending from the aid to the golfer's target and a second use position wherein said rod extends parallel to the ground in closely spaced relationship with the ground.

3,942,803

GASTIGHT PASSAGE SEAL

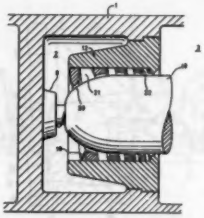
Petrus Leo Clemens Wijnant, 's-Hertogenbosch, and Hendrik Jan Ijlstra, Weesp, both of Netherlands, assignors to Reactor Centrum Nederland, The Hague, Netherlands

Filed June 9, 1972, Ser. No. 261,397

Claims priority, application Netherlands, June 11, 1971, 7108002

Int. Cl. F16j 15/44

U.S. Cl. 277—53 1 Claim



1. In an apparatus having a gastight spiral passage between a rapidly rotating solid of revolution having a curved contour and the inner wall of a stationary housing which surrounds said solid of revolution the improvement which comprises a casting in the form of a tubular support element surrounding said solid of revolution within said housing and sealed to said inner wall of said housing, and at least one continuous casting in the form of a spiral rib having a variable pitch, said spiral rib being shrunk fit within said tubular support element to thereby tightly engage the inner wall of said tubular support element so that said spiral passage is bounded by the sides of said sprial rib, the exposed portions of the inner wall of said tubular support and the adjacent surface of said solid of revolution.

3,942,804

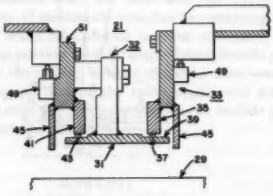
TURBOMACHINE SEAL

Otto G. Andress, Burnt Hills; Joseph W. Fischetti, Ballston Lake; Anthony J. Renzi, and Francis D. Ryan, both of Schenectady, all of N.Y., assignors to General Electric Co., Schenectady, N.Y.

Filed Nov. 18, 1974, Ser. No. 524,755

Int. Cl.² F16J 15/38, 15/48

U.S. Cl. 277—58 9 Claims



1. In a turbomachine having at least two separate sections each section including a rotor portion; sealing means disposed between adjacent section ends and spaced radially outward from said rotor portion comprising:

a. an annular, axially elongated wrapper extending radially inwardly from one adjacent section end; and,

b. a first sealing element attached at one end to the other adjacent section end, said sealing element extending radially inwardly toward said wrapper and having a free end terminating at the annular wrapper outer surface.

3,942,805

FRICTIONLESS SEALING OPERATED BY PRESSURE MEDIUM

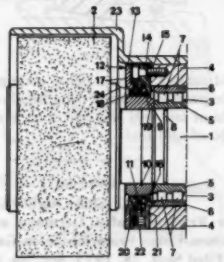
Yngve Bertil Sundqvist, Partille, Sweden, assignor to SKF Industrial Trading and Development Company B-V., Jutphaas, Netherlands

Filed Dec. 20, 1973, Ser. No. 426,778

Claims priority, application Sweden, Dec. 22, 1972, 16856/72

Int. Cl. F16j 15/40

U.S. Cl. 277—75 20 Claims



1. For sealing between a stationary first member and a second member coaxially rotatable with respect to said first member, a sealing ring comprising a rotationally symmetric surface zone, said sealing ring being adapted for stationary attachment relative to said first member and elastically deformable at a portion thereof located closest to said second member, said sealing ring including two annular surface portions provided in spaced relationship to each other along said portion, said surface portions during absence of external actuation sealingly abutting the rotationally symmetric surface zone on said second member, said surface portions having between themselves an intermediate annular groove into which open a plurality of channels for supplying a pressure medium to a space defined by said second member and the walls of said annular groove, said supplying of pressure medium building up in said space a pressure such that between each of said annular surface portions and said rotationally symmetric zone on said second member a narrow annular gap is formed through which said pressure medium can leak out to the ambient, and further comprising a plurality of partition walls extending from the bottom of said annular groove up to the level of said annular surface portions and transversely across said annular groove from one annular surface portion to the other, thereby dividing said intermediate annular groove into a corresponding number of groove sections separated from each other, at least one of said channels opening into each such groove section, whereby co-action of said sealing ring with said second member results in each groove section constituting a separate pressure chamber.

3,942,806

SEALING RING STRUCTURE

Roy Edlund, Stuttgart-Botnang, Germany, assignor to Firma Busak & Luyken KG,, Stuttgart, Germany

Filed May 6, 1974, Ser. No. 467,576

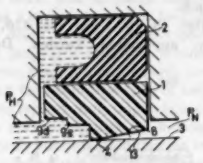
Claims priority, application Germany, May 17, 1973, 2325000; July 12, 1973, 2335452

Int. Cl.² F16J 9/00

U.S. Cl. 277—165 11 Claims

1. A ring seal for effecting a fluid seal between a pair of members one of which is movable with respect to the other the improvement, comprising an annular sealing section and a concentric stressing section adapted to radially bias said sealing section, said sealing section having a contact surface adapted to slidably engage said movable member, said contact surface defined by a the intersection of cylindrical recess

extending axially inwardly from one end thereof terminating in a radially extending edge and by a radially inwardly inclined conical recess extending axially inward from the opposite end



thereof, said sealing section being arranged with respect to said movable parts so that said cylindrical recess faces the high pressure side of said seal and said conical recess faces the low pressure side of said seal.

3,942,807

SEALING ARRANGEMENT

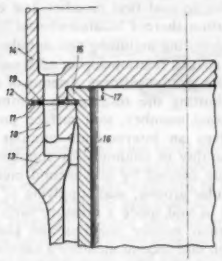
Hans Dinger, Friedrichshafen, Germany, assignor to Motoren- und Turbinen-Union Friedrichshafen GmbH, Germany

Filed Sept. 28, 1973, Ser. No. 401,846

Claims priority, application Germany, Sept. 29, 1972, 2248039

Int. Cl.² F16J *15/08*

U.S. Cl. 277—180 **15 Claims**



1. A sealing arrangement within the area of the joint surface means between cylinder head, cylinder liner and cylinder-crankcase of an internal combustion engine equipped with inserted cylinder liners provided with a flange, a fitting recess being provided at the cylinder head for accommodating the cylinder liner flange, characterized in that a flat seal means is arranged on the joint surface means between cylinder-crankcase and cylinder head and in that both the flange of the cylinder liner as also the cylinder head rest on the flat seal means, the transmission of the contact pressure onto the cylinder liner flange taking place by direct contact with the cylinder head.

3,942,808

PISTON RING ASSEMBLY

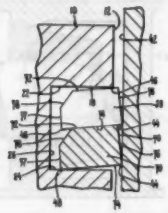
Dario R. Gross, Owosso, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio

Continuation of Ser. No. 363,976, May 25, 1973, abandoned. This application Nov. 8, 1974, Ser. No. 522,005

Int. Cl.² F16J *15/00*

U.S. Cl. 277—197 **1 Claim**

1. In combination; a piston recirpocatingly positioned in a cylinder, said piston having an outer peripheral piston wall, a circumferential ring groove extending inwardly from said piston wall and having substantially parallel upper and lower annular groove surfaces terminating at upper and lower annular groove edges at said piston wall, a pair of positive twist split rings of substantially the same size and shape positioned in said groove, each said ring being generally circular and having a transverse gap, each said ring having a generally rectangular cross-sectional shape including substantially flat and parallel upper and lower surfaces, substantially flat inner and outer surfaces, and a chamfer between said upper and inner surfaces, said outer surface intersecting said lower surface at a knife edge, said rings being positioned in said groove with said transverse gaps circumferentially displaced from one another, said rings being radially compressed to reduce the size of said



gaps and to dish said rings upwardly, said knife edges on each said ring being in engagement with the wall of said cylinder, said groove and rings being axially dimensioned so that said rings are axially stressed with said upper surface of one said ring adjacent said outer surface thereof engaging said upper groove surface adjacent said upper groove edge and with said lower surface of the other said ring adjacent said inner surface thereof engaging said lower groove surface, and said rings having their facing upper and lower surfaces engaging one another over substantially their entire area to prevent relative rotation between said rings.

3,942,809

SAFETY SKI BINDING

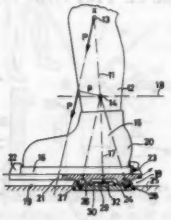
Brigitte Sittmann, Stuttgart, Germany, assignor to Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH, Germany

Filed Oct. 23, 1973, Ser. No. 408,741

Claims priority, application Germany, Oct. 21, 1972, 2251775

Int. Cl.² A63C *9/08*

U.S. Cl. 280—11.35 R **30 Claims**

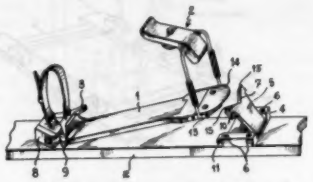


1. A safety ski binding which comprises a release means retaining a ski boot against a resistance, comprising means rotatably supporting the boot for movement by an amount sufficient for the release of the boot about a cross axis arranged intermediate the ball and heel area of the boot and intermediate the running surface of the ski and the knee joint of the skier, said release means releasing in response to a predetermined torque in relation to said cross axis which torque corresponds to a just barely still tolerable bending moment tolerable by the lower leg of the skier, said cross axis being vertically spaced above the sole of the boot when said boot is in a clamped position on a ski.

3,942,810
SAFETY FIXING DEVICE FOR SKIS

Georges Pierre Joseph Salomon, Annecy, France, assignor to S.A. Etablissements Francois Salomon & Fils, Annecy, France

Filed Jan. 18, 1974, Ser. No. 434,543
Claims priority, application France, Jan. 19, 1973, 73.01867
Int. Cl.² A63C 9/08
U.S. Cl. 280—11.35 K 15 Claims



1. A safety fixing device for skis permitting automatic recentering of the boot on the longitudinal axis of the ski when the skier fixes said device on the feet while standing up, said device including a member for retaining one of the extremities of said boot, comprising:

a first ramp mounted on said boot,

a catch member mounted on said ski comprising a mobile portion on which is located a second ramp; said mobile portion moving between two positions,

a first position in which the mobile portion of said catch member is raised with respect to said ski,

a second position in which the mobile portion of said catch member is locked with respect to the ski;

the transition from said first to said second position being effected by the action of the boot against the action of an elastic member located in said fixing device at least at one end of the extremities of the boot, the profile of said two ramps in a plane parallel to the ski and to the sole of said boot having substantially the form of a concave curve and a convex curve opening out towards the same extremity of said ski;

said ramp mounted on said boot comprising at least one projecting portion and two sliding surfaces, one said surface being substantially parallel to said boot and directed downwards, the other being inclined with respect to said boot and directed upwards;

the ramp located on the mobile portion of said catch member comprising at least one projecting portion,

the ramp associated with the boot and the ramp of the mobile portion of said catch member cooperating in such manner that when said mobile portion rotates:

the projecting portion of the ramp of said mobile portion slides over the sliding surface directed downwards;

the projecting portion of the ramp associated with said boot slides over the ramp located on the mobile portion of said catch member.

3,942,811
SAFETY BINDING

George Pierre Joseph Salomon, Annecy, France, assignor to Etablissements Francois Salomon et Fils, Annecy, France

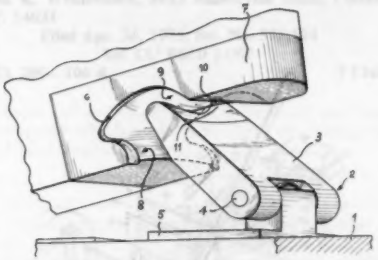
Filed Mar. 6, 1975, Ser. No. 555,866
Claims priority, application France, Mar. 6, 1974, 74.07643
Int. Cl.² A63C 9/08
U.S. Cl. 280—11.35 T 14 Claims

1. A safety binding providing automatic recentering of the boot on the longitudinal axis of the ski when the binding is fitted to the boot with the skier standing upright;

said binding comprising an element for retaining one end of the boot, said element comprising a catch cooperating with a slope located at the end of the boot and being mobile, in relation to the ski, between two positions:

a first boot-removed position, in which the catch is lifted away from the ski, so that the skier may remove his boot from the binding;

a second boot-fitted position, in which the catch is lowered towards the ski and cooperates with a slope located on the boot in such a manner that said boot is held to the ski;

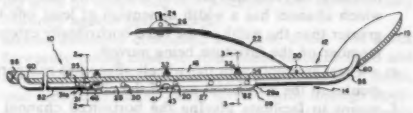


said binding being characterized in that the end of the boot also has a permanent sliding surface located above the slope which cooperates with the catch, said sliding surface being downwardly oriented and also cooperating with the mobile catch when the latter pivots from said first to said second position, thus centering the boot on the longitudinal axis of the ski and becoming partly embedded in the boot.

3,942,812
SNOWMOBILE SKI

Woodruff J. Kozlow, 491 Somerset, Standish, Mich. 48658

Continuation of Ser. No. 253,863, May 16, 1972, Pat. No. 3,778,078. This application Dec. 6, 1973, Ser. No. 422,428
Int. Cl.² B62B 17/02
U.S. Cl. 280—28 15 Claims



1. A keel for longitudinally extending ski runner including:

wear rail means for engaging a surface to be traversed;

longitudinally extending wear rail mount means having an upper face for bearing against the underside of said ski runner and a lower face having a longitudinally extending groove therein;

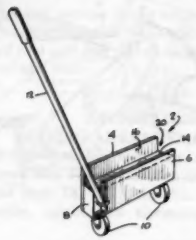
means for fastening said mount means to the underside of said runner; said wear rail means comprising a plurality of longitudinally spaced, flat discs having upper portions received in said groove and lower portions extending below said mount means, said discs being mounted for rotation on said mount means to permit selected perimetrically spaced portions of said discs to engage the surface to be traversed.

3,942,813

APPARATUS FOR FACILITATING MOVEMENT OF FURNITURE

Bernard F. Dombroski, P.O. Box 164, Rte. 520, Marlboro, N.J. 07746

Filed Feb. 12, 1975, Ser. No. 549,202
Int. Cl.² B62B 1/10
U.S. Cl. 280—47.13 R 3 Claims



1. A vehicular device for moving a furniture piece having a fixed horizontally extending member and vertically extending means in essentially a vertical plane above the vehicular device comprising:

a. a first vertical side sized to extend upwardly beyond the plane of the horizontal axis of the fixed horizontally extending member on the furniture piece;

b. a second vertical side opposite the first vertical side extending upwardly to an elevation above the horizontal furniture piece such that rotation of the vehicular device around the horizontal member will cause the upper edge of the second vertical side to bear against the vertically extending means on the furniture piece in a vertical plane above the vehicular device;

c. a flat bottom member;

d. a horizontally extending channel defined by the flat bottom member, first side member and second side member, which channel has a width dimension at least one-third greater than the width of the fixed horizontally extending member on the furniture being moved;

e. a wheel assembly with the wheels aligned to roll perpendicular to the horizontal axis of the channel;

f. means to facilitate placing the horizontal channel into position to receive the horizontally extending member on the furniture piece and facilitate rotating the device around the horizontally extending member of the furniture piece by rolling the wheels of the wheel assembly from one side of the horizontally extending member of the furniture piece to the opposite side;

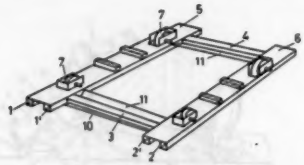
g. whereby rotation of the device around the horizontally extending member of the furniture piece elevates one end of the furniture and the upper edge of the second side piece bears against the vertically extending means on the furniture piece to urge the horizontally extending member of the furniture piece against the inner surface of the first side and the vehicular device is at an angle such that the horizontal axis of the wheel assembly and channel are displaced to the side of the horizontal axis of the horizontally extending member of the furniture piece opposite of the first vertical side.

3,942,814

MOBILE STORAGE AND TRANSPORT UNIT FOR USE IN A SHELF STORAGE SYSTEM

Max A. Buhler, Thalwil, Switzerland, assignor to Weelpal, A.G., Zug, Switzerland

Filed Feb. 25, 1975, Ser. No. 552,961
Claims priority, application Switzerland, Feb. 27, 1974, 2875
Int. Cl.² B62B 5/00
U.S. Cl. 280—79.1 5 Claims



1. A mobile storage and transport unit for use in a shelf storage system comprising

a first part comprising a four sided frame supported with two pairs of rotatable supports disposed at opposite sides respectively of the frame and with their axes of rotation disposed above the frame,

a second part adapted to be interchangeably supported on the first part and formed to receive and carry the goods to be stored and transported,

the frame of said first part comprising two longitudinal members and two cross members rigidly connected to form a four sided, right-angled frame, in which the said longitudinal members of opposite sides of the frame each comprise a pair of spaced limbs between which a pair of rotational members are disposed, and in which the cross members of opposite sides of the frame each comprise a profiled member having a first, smaller protruding part extending towards the outsides of the frame in a plane substantially parallel to the plane defined by the frame, and having a second, longer protruding part arranged on the opposite side on said profiled member extending upwardly inclined towards the insides of the frame, both of said protruding parts having a width corresponding to the width of said profiled members.

3,942,815

SUSPENSION SYSTEM FOR A STEERABLE VEHICLE AXLE

Kurt Schwenk, and Albert Grotewohl, both of Wolfsburg, Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed July 1, 1974, Ser. No. 484,887
Claims priority, application Germany, July 4, 1973, 2333950
Int. Cl.² B60G 15/00
U.S. Cl. 280—96.2 R 8 Claims

1. A suspension system for a steerable axle of a motor vehicle comprising, in combination:

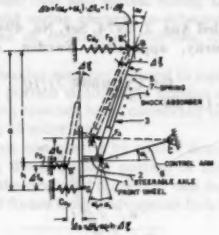
a. an axle;

b. a vehicle wheel mounted on said axle;

c. a spring member extending approximately vertically between said axle and the frame of the vehicle, said spring member having a longitudinal axis forming an angle α_F with respect to the vertical, and said spring member including a shock absorber having a piston arranged within a cylinder and a piston rod extending between said piston and one end of said shock absorber; and

d. a control arm extending approximately horizontally between said spring member and the frame of the vehicle, the point of articulation between the control arm and the spring member being a vertical distance h above the point

of wheel contact with the ground and a vertical distance *l* below the point of articulation between the spring member and the vehicle frame, said control arm having a longitudinal axis forming an angle α_L with respect to the horizontal;



the transverse rigidity of the vehicle wheel at the point of contact with the ground being c_{Rv}, and the transverse rigidity at the point of articulation between the spring member and the vehicle frame, as determined essentially by the flexural rigidity of the piston rod, being c_{Bv};

wherein the parameters α_F, α_L, h, l, c_{Rv} and c_{Bv} are so chosen that the following factor, called the "wheelfight factor", is approximately zero:

$$k\xi = \frac{\alpha_F + \alpha_L \left(1 - \frac{c_{Rv}/c_{Bv}}{(l/h)}\right)}{1 + \frac{c_{Rv}/c_{Bv}}{(l/h)^2}}$$

whereby, in operation, the steering system will not be susceptible to wheelfight.

3,942,816

FRONT WHEEL SUSPENSION FOR MOTOR VEHICLES

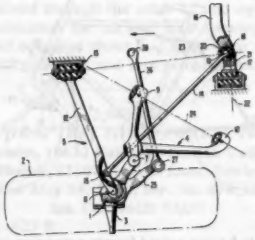
Hans O. Scherenberg, Stuttgart; Friedrich H. van Winsen, Kirchheim, and Erich Waxenberger, Neuhausen, all of Germany, assignors to Daimler-Benz AG, Germany

Filed Nov. 4, 1974, Ser. No. 520,908

Claims priority, application Germany, Nov. 7, 1973, 2355588

Int. Cl.² B62D 7/16

U.S. Cl. 280—96.2 R **34 Claims**



1. A front wheel suspension for a motor vehicle having a superstructure with its front wheels disposed opposite one another on the two vehicle sides, said suspension comprising a substantially triangularly shaped guide means for each said wheels, each said guide means of each vehicle side having a forward and rear guide arm pivotally connected with each other, means pivotally and elastically connecting the corresponding forward guide arms directly to the vehicle superstructure to provide a relatively soft absorption of forces in the vehicle transverse direction, a cross yoke means common to the wheel guide means on both vehicle sides elastically connected with the vehicle superstructure, means operatively connecting the respective rear guide arms on said cross yoke, each said rear guide connecting means including elastic means elastically connecting said rear guide to the cross yoke means.

3,942,817

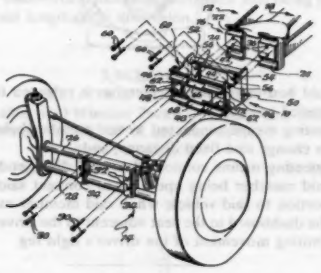
EXTENSION FOR CAR FRAME

Conrad K. Weiffenbach, 5483 Shimerville Road, Clarence, N.Y. 14031

Filed Apr. 30, 1975, Ser. No. 573,124

Int. Cl.² B62D 21/02

U.S. Cl. 280—106 R **7 Claims**



1. A unit for extending the frame of a car, which frame is characterized as having a bracket for mounting a front axle assembly of said car, said front axle assembly including horizontally extending upper and lower axle tubes and a pair of vertically disposed axle jointing posts bored to receive mounting bolts, said bracket being formed with upper and lower pairs of aligned concave mounting surfaces sized and spaced to receive said upper and lower axle tubes and threaded openings to receive said bolts whereby to permit said axle tubes to be removably clamped within said mounting surfaces, said unit comprising:

a first assembly contoured to define upper and lower rearwardly facing convex attaching surfaces sized and arranged for receipt within said mounting surfaces, said first assembly being formed with through openings for receiving bolts by which said first assembly may be removably clamped against said bracket;

a second assembly contoured to define upper and lower forwardly facing concave attachment surfaces sized and arranged for receiving said upper and lower axle tubes, said second assembly being formed with through openings for receiving bolts by which said front axle assembly may be removably clamped against said second assembly; and

cantilever means connecting said second assembly to said first assembly in a horizontally spaced and essentially parallel relationship.

3,942,818

RESTRAINING DEVICE FOR A DRIVER'S LEG IN A VEHICLE

David L. Rohrman, R.R. 8, Box 14, Greenfield, Ind. 46140

Filed Mar. 31, 1975, Ser. No. 563,563

Int. Cl.² B60R 27/00

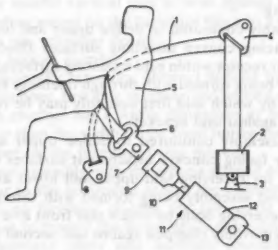
U.S. Cl. 280—150 R **6 Claims**

1. A device connected between the dahsboard and seat of a vehicle for restraining leg movement of the driver comprising:

a housing;
mounting means connected to said housing and being operable to mount said housing to a vehicle adjacent the driver;
a flexible elongated member positioned within said housing and extendable therefrom a fixed distance, said member having a distal end portion;
spring means mounted in said housing and connected to said member being operable to retract said member into

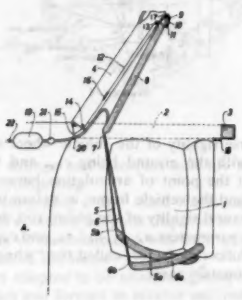
said housing after said member is released from an extended position;
adjusting means connected to said member being operable to change said fixed distance; and,
connecting means connected to said distal end portion of said member being operable to connect said distal end portion to said vehicle when said member extends from the dashboard to the seat adjacent to the driver's right leg limiting movement of the driver's right leg.

3,942,819
SAFETY BELT TENSIONING DEVICE
Wilfried Schwanz; Ernst Fiala, both of Braunschweig; Rolf Warnecke, Ribbesbuttel, and Peter Buchholz, Braunschweig, all of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany
Division of Ser. No. 299,783, Oct. 24, 1972, Pat. No. 3,871,470. This application Dec. 19, 1974, Ser. No. 534,364
Int. Cl.² B60R 21/10
U.S. Cl. 280—150 SB 3 Claims



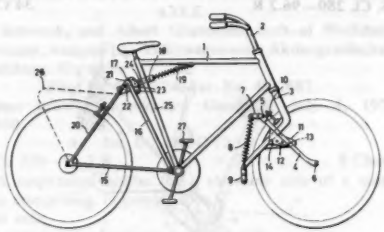
1. Apparatus for tensioning a safety belt when actuated, comprising, in combination:
a. piston means;
b. cylinder means, surrounding said piston means, for applying a force to cause said piston means to move therein upon actuation;
c. intermediate means, connecting said piston means to the safety belt, for tensioning the safety belt upon movement of said piston, said intermediate means comprising roller means for winding said safety belt and drive means coupled to said roller means and, projecting into the path of travel of said piston means, for rotating said roller means upon actuation of said piston means; and
d. return stop means for maintaining tension in the safety belt after tensioning by said intermediate means.

3,942,820
SAFETY BELT FOR VEHICLES
Oskar Lennart Lindblad, Hedasgatan 16, 440 20 Vargarda, Sweden
Filed Aug. 2, 1974, Ser. No. 494,189
Claims priority, application Sweden, Aug. 13, 1973, 7311025
Int. Cl.² B60R 21/10
U.S. Cl. 280—150 SB 13 Claims



1. Safety belts for vehicles comprising a vehicle, a safety belt being connected to anchoring points on vehicle and having belt portions of a hose like configuration capable of being expanded by a pressure medium, valved means capable of supplying a pressure medium to said belt portions, means for the directional guiding of said belt portions, and clamping means capable of squeezing said belt portions at given points.

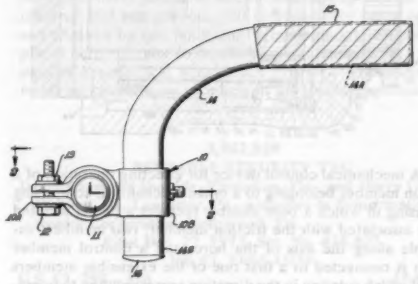
3,942,821
BICYCLE SUSPENSION
Rolf Bock, Alteburger Str. 331, D-5 Cologne 51, Germany
Filed Sept. 24, 1974, Ser. No. 508,867
Claims priority, application Germany, Sept. 29, 1973, 2349159
Int. Cl.² B62K 25/12
U.S. Cl. 280—277 9 Claims



1. In a bicycle having a rigid frame; a steering column rotatably supported by said frame; separate wheel supporting means for securing the front wheel and the rear wheel to the steering column and the rigid frame, respectively, the improvement in the rear wheel supporting means comprising:
a. a rocker fork having one end supporting the rear wheel and another end at which it is articulated to said frame;
b. a support fork rigidly affixed to said rocker fork and extending at an angle to said rocker fork from the articulation thereof with said frame;

c. a sole spring element having first and second ends;
d. first spring support means for connecting said first end of said spring element to said rocker means;
e. second spring support means for articulately holding said second end of said spring element; said second spring support means being constituted by an integral part of said frame; said first and second spring support means positioning said spring element in substantial alignment with the plane of rotation of said one of said bicycle wheels;
f. a forked connecting member secured to said support fork and having a portion straddling a portion of said frame, said connecting member being connected to said first end of said spring element; and
g. guide elements constituted by rollers disposed between and engaging the straddling portion of said connecting member and the straddled portion of said frame for transmitting lateral forces from said support fork to said frame.

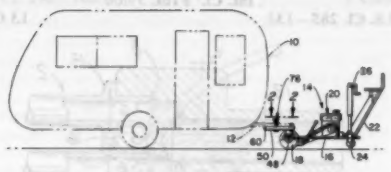
3,942,822
UPRIGHT BIKE BAR
Nathanial H. Lewis, P.O. Box 20424, Los Angeles, Calif. 90006
Filed Aug. 16, 1974, Ser. No. 498,644
Int. Cl.² B62K 21/26
U.S. Cl. 280—289 **1 Claim**



1. A bike bar attachment for a vehicle having a handlebar, said attachment comprising a tube having a right angle bend, a hand grip mounted on one end of said tube, a cap closing the other end of said tube, a mounting assembly having two through openings, the center lines of said openings being mutually perpendicular and non-intersecting, said handle bar being slidably and pivotally received through one of said openings, and said other end of said tube being slidably and pivotally received through the other of said openings, and a bolt-nut combination for each of said openings, adjustably tightening said openings about said handle bar and said tube to prevent said slidability and said pivotability.

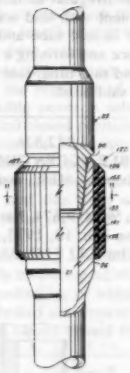
3,942,823
TOWING TRACTOR CONSTRUCTION
Morton K. Shields, 18632 Gault St., Reseda, Calif. 91335, and Russell K. Shields, 12107 Maddox Lane, Bowie, Md. 20715
Filed May 15, 1974, Ser. No. 470,126
Int. Cl.² B62D 53/00
U.S. Cl. 280—423 R **9 Claims**

1. In combination with a tractor for towing a vehicle, said tractor having a chassis, the longitudinal dimension of said chassis having a forward end and an aft end, a pair of spaced apart driving wheels mounted upon said aft end of said chassis, said driving wheels having a common axis of rotation, power means for rotating said driving wheels, a connecting means mounted on said tractor for connecting the tractor to the vehicle, said connecting means comprises:
an elongated member mounted by pivot means upon said chassis, said pivot means including structure movably supporting said elongated member relative to said chassis about a horizontal axis and a vertical axis, said vertical axis intersecting said common axis of rotation midway



between said driving wheels, said horizontal axis intersecting said vertical axis, said horizontal axis being parallel to said longitudinal dimension.

3,942,824
WELL TOOL PROTECTOR
Donald E. Sable, 4413 Windsor Parkway, Dallas, Tex. 75205
Filed Nov. 12, 1973, Ser. No. 414,737
Int. Cl.² F16L 57/00
U.S. Cl. 285—45 **14 Claims**



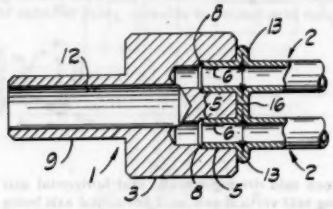
1. A protector for a well tool joint formed of a pin-half on one section of an elongate well tool having an annular external shoulder and a reduced threaded end portion and a box-half on another elongate section of the well tool having a threaded bore for receiving the reduced threaded end portion and an external annular shoulder facing the external shoulder of the pin-half when said halves are connected, said protector including: a rigid single piece cylindrical member having an internal annular flange at one end; and internal resilient compression means in said cylindrical member extending longitudinally relative to said cylindrical member at least half the length thereof and compressible against said cylindrical member when said protector is positioned on one of said joint halves, said flange being positioned between and engageable with said external shoulders of said joint halves and rotatable relative to said joint halves when said protector is positioned on said one of said joint halves for limiting longitudinal movement of said protector relative to said joint halves and permitting rotation of said protector relative thereto.

3,942,825

PILOT LIGHT HARNESS FOR GAS STOVE

Albert J. Balon, 9717 Greenhaven Parkway, Brecksville, Ohio 44131

Filed July 11, 1973, Ser. No. 378,318
Int. Cl.² F16L 39/00
U.S. Cl. 285—132 13 Claims



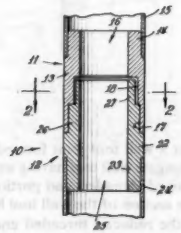
1. A tube and fitting assembly for fluid lines and the like, comprising a fitting means having a recess, a peripheral surface on said fitting means about said recess, said recess having an internal side wall having an irregular surface and being adapted to be placed in open flow communication with a fluid, an elongated tube having a side wall and an end, said tube end being inserted within said recess to a predeterminable depth from said peripheral surface, stop means within said recess determining said depth, said tube end abutting said stop means, a portion of said wall of said tube being distorted into engagement with said irregular surface and into complementary sealing engagement with said wall of said recess, and a sealing bead formed in said tube and in direct contact with said peripheral surface and forming a fluid tight seal between said fitting means and said tube, said wall of said tube being unbroken at and by said bead.

3,942,826

DOUBLE ECCENTRIC LOCK

Fritz O. Lester, Kalamazoo, Mich., assignor to Liane E. Lester, Kalamazoo, Mich.

Continuation of Ser. No. 419,674, Nov. 28, 1973, abandoned.
This application Feb. 18, 1975, Ser. No. 550,529
Int. Cl.² F16L 55/00
U.S. Cl. 285—178 2 Claims



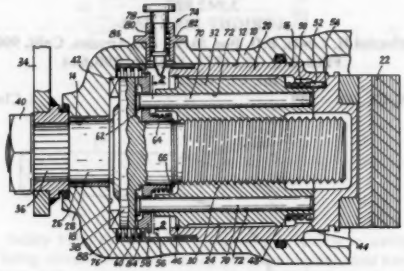
1. An eccentric lock assembly comprising a pair of lock members having in the locked position a common axis, one of said lock members being a male lock member having a coaxial surface portion, a coaxial cylindrical portion set down from said surface portion thereby forming a shoulder, and an eccentric cylindrical portion set down from said coaxial cylindrical portion thereby forming a second shoulder, and the other lock member being a female lock member having complementary surface, coaxial, and eccentric portions, said coaxial portions having a close fit and said eccentric portions having a loose fit whereby the male lock member can be inserted into the female lock member and one said lock member rotated about said axis relative to the other said lock member over a substantial angle until the male eccentric portion binds against the female eccentric portion, and said surface portions in the locked position having common surface elements which terminate at the lip of said first named shoulder whereby irrespective of the relative rotation of the two lock members about the axis, the surface of one appears as an extension of the surface of the other.

3,942,827

MECHANICAL CONTROL DEVICE FOR A DISC BRAKE

Fernand Warlop, Aulnay-sous-Bois, and Jean-Claude Mery, Pavillon-sous-Bois, both of France, assignors to Societe Anonyme D.B.A., Paris, France

Filed Mar. 6, 1975, Ser. No. 556,052
Int. Cl.² F16D 65/56
U.S. Cl. 188—196 BA 6 Claims



1. A mechanical control device for effecting operation of a friction member belonging to a brake mechanism, comprising a housing in which a bore slidably receives a piston adapted to be associated with the friction member, two members extensible along the axis of the bore, and a control member which is connected to a first one of the extensible members and of which rotation in the direction corresponding to operation of the brake mechanism causes the second extensible member to extend from the first member, so urging the piston in the direction corresponding to operation of the friction member, adjusting means being provided to take up wear on the friction member, characterized in that the adjusting means comprise an element normally connected to the first extensible member by one-way transmission means enabling said element to turn relative to the first extensible member through an angle corresponding to the wear on the friction member beyond a predetermined value upon operation of the control member, resilient coupling means then coupling the second extensible member and the piston, but enabling said element to cause the second extensible member to turn through said angle so that it extends from the first extensible member upon return of the control member to its idle position.

3,942,828

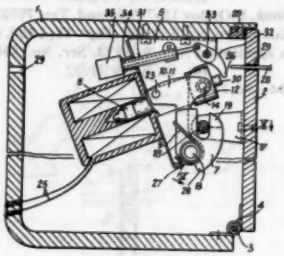
ELECTROMECHANICAL DEVICE CUM MANUAL CONTROL OF SAFETY OUTFIT BOXES ON AIRCRAFTS

Georges E. Bourrie, Neuilly-sur-Seine, and Robert M. Lensel, Bourg-la-Reine, both of France, assignors to R. Alkan & Cie, Valenton, France

Filed Apr. 10, 1975, Ser. No. 566,710
Claims priority, application France, Apr. 18, 1974, 74.13508
Int. Cl.² E05C 3/06
U.S. Cl. 292—201 5 Claims

1. Electromechanical device with manual emergency control for opening the door of a safety outfit box on board an aircraft, comprising a box having two portions to be interlocked, an electromagnet being mounted in said box, a spring

loaded piston responsive to and slideably mounted on said electromagnet and having a head formed with successive axial portions having different diameters, locking members being associated with said piston head and adapted to take either an outward projecting locking position or a retracted release position, a retaining hook pivotally mounted on one of the two



portions of said box to be interlocked, a strap carried by the other of said box portions and positioned for being engaged and retained by said hook, said retaining hook comprising in planes perpendicular to its axis of pivotal movement a pair of parallel symmetrical wings each provided with a hole for receiving said locking members in the locking position.

3,942,829

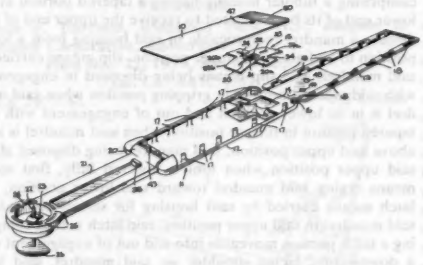
REUSABLE SECURITY TAG

David Raymond Humble, Plantation, Fla., and Harry Godfrey Walters, III, Lancaster, Pa., assignors to Sensormatic Electronics Corporation, Hollywood, Fla.

Filed Dec. 27, 1973, Ser. No. 428,827

Int. Cl. B65d *33/34*

U.S. Cl. 292—316 **15 Claims**



1. A reusable security tag for securing an element, detectable by independent means, to an article to be maintained under surveillance, comprising: a pin having a first end adapted to be urged through a portion of said article, means for preventing the opposite end of said pin from passing through said article, clutch lock means for accepting facile insertion of said first end of the pin therein after the latter has passed through said article but resisting removal of an inserted pin, an enclosure for concealing said lock means, and means for concealing said detectable element joined to at least one of said pin and said enclosure, said enclosure being constructed and arranged to permit authorized nondestructive release of said pin from said lock means.

3,942,830

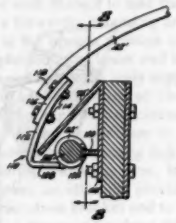
ACCORDION COVER FOR DUMP TRUCKS

Boyd Ray Woodard, 6995 NW. 32nd Ave., Miami, Fla. 33147

Filed Feb. 11, 1974, Ser. No. 441,459

Int. Cl.² B60P *7/02*

U.S. Cl. 296—105 **5 Claims**



1. An accordion cover for the open top, load-carrying body of a truck comprising,

A. a flexible cover, adapted to be moved from a normally open, stacked disposition relative to the open top to an extended, closed disposition relative thereto;

B. a plurality of frame members spanning the open top in a fixed, spaced apart relation along the length of said flexible cover, each of said frame members including a pair of end portions extending downwardly and outwardly of the respective top, side edges of the load-carrying body;

C. means to movably connect each of said pair of end portions relative to the length of said load-carrying body;

D. reversible motor drive means;

E. cable means connecting between said reversible motor drive means and the rearmost of said frame members whereby said flexible cover is selectively movable between said open and closed positions;

F. said means to connect comprising guide means fixed relative to the outside of opposed side walls of the load-carrying body and including brackets connecting said guide means and said side walls and a collar having a longitudinal slot along its length comprising means to bypass said brackets;

G. each of said collars having affixed thereto, as by welding, a radially outwardly extending leg of a generally L-shaped bracket, the upstanding leg of which is curved upwardly and inwardly for bolted attachment to a foot plate fixed to one end portion of one of said frame members.

3,942,831

REMOVABLE AND DISPOSABLE WASTE COLLECTOR

William Sosnove, 3821 Long Beach Blvd., Long Beach, Calif. 90807

Filed Jan. 12, 1970, Ser. No. 2,318

The portion of the term of this patent subsequent to Jan. 9, 1989, has been disclaimed.

Int. Cl.² A01B *1/02;* **A47F** *13/08*

U.S. Cl. 294—55 **2 Claims**

1. A portable apparatus for collecting waste products and various debris therein, said apparatus comprising:

a. a generally rectangularly shaped open pan having a flat bottom portion, side portions, and a rear portion;

b. bar means for fixedly connecting the side portions of said pan at the front thereof so as to define a substantially planar open front end;

c. a substantially U-shaped member each leg of which is rotatably mounted on the outside of one of the side portions of said pan;

d. a handle rotatably mounted on the portion of said substantially U-shaped member joining the legs thereof;

e. a flexible and disposable container adapted to be inserted within the confines of said pan with the opening thereof

folded back over the front edges of the bottom portion and side portions of said pan and the front edge of said bar means;

f. elastic band means for removably connecting the portion of said container folded over said pan and said bar means to said pan and said bar means, thereby providing a planar passageway into the interior of said container; and

g. a support member mounted on said handle in a position such that, when said handle is rotated so that said pan is substantially vertical with the open front above the rear portion of said pan, the rear portion of said pan rests upon said support member, thereby facilitating the removal of said disposable container without physical contact with waste products or debris contained therein.

3,942,832

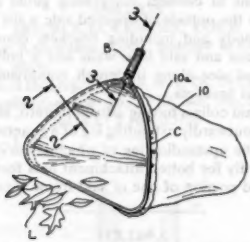
LEAF COLLECTOR

Donald A. Haas, Jr., 128 Industrial Drive, Summerville, S.C. 29483

Filed June 27, 1974, Ser. No. 483,623

Int. Cl.[2] A47F *13/08*

U.S. Cl. 294—55 **2 Claims**



1. A holder for a bag for collecting leaves and the like from the ground comprising:

an open rim for receiving an open end of a bag with an open edge portion of the bag passing over and around the rim;

said open rim having a pair of opposed elongated sides connected by a straight side and terminating in a pair of straight ends extending outwardly from said open rim;

an outwardly extending hollow handle receiving said ends at a juncture thereof extending normally towards said straight side providing exertion of uniform pressure on said straight side of the rim against the ground with the handle in elevated position to present the bag in an open position for the reception of leaves;

an elongated elastic restraining member having a pair of ends permanently secured within said handle forming an extensible loop which may be extended and passed about said rim attaching the open end of the bag around the rim; and

groove means on said rim retaining said elastic restraining member about said rim maintaining the open end of the bag attached around the rim;

whereby the open end of the bag may be readily secured about the rim by simply extending the loop thereabout, and the holder may be held in the hand of the user and conveniently placed with the straight side opposite the handle on the ground to facilitate the collection of leaves.

3,942,833

RUNNING TOOLS

Rowe A. Plunk, P.O. Box 1167, Midland, Tex. 79701

Continuation of Ser. No. 859,140, Sept. 18, 1969, abandoned.

This application Nov. 9, 1972, Ser. No. 304,993

Int. Cl. E21b *31/02*

U.S. Cl. 294—86.18 **4 Claims**

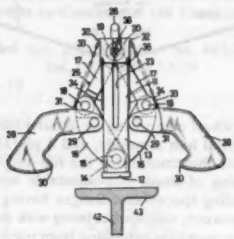
1. A running tool for setting and retrieving a well device comprising a tubular housing having a tapered portion at the lower end of its bore adapted to receive the upper end of said device, a mandrel reciprocable in said housing from a lower position to and above an upper position, slip means carried by said mandrel, said slip means being disposed in engagement with said tapered portion in gripping position when said mandrel is in its lower position and out of engagement with said tapered portion in release position when said mandrel is at or above said upper position, said mandrel being disposed above said upper position when tool is lowered fully, first spring means urging said mandrel toward said lower position, and latch means carried by said housing for selectively holding said mandrel in said upper position, said latch means comprising a latch portion moveable into and out of engagement with a downwardly facing shoulder on said mandrel, said latch portion being spaced below said shoulder when said mandrel is above said upper position, second spring means biasing said latch portion toward engagement with said shoulder, said second spring means having a predetermined strength sufficient to retain said latch portion in latching engagement with said shoulder upon slow upward movement of said housing whereby said housing, said mandrel, and said slip means may be moved upwardly together with said slip means latched in its upper release position, but said predetermined strength being insufficient to retain said latch portion in latching engagement with said shoulder upon rapid upward movement of said housing, whereby during said rapid upward movement, said latch portion rides outwardly over said shoulder due to the inertia of said mandrel, and said slip means is moved by said first spring means to its lower gripping position with said device.

3,942,834

HOOKED CLUTCH

Yasuzi Kawaguchi, Sakai, Japan, assignor to Nittan Kohki Kabushiki Kaisha, Sakai, Japan

Filed Mar. 6, 1975, Ser. No. 555,937
Claims priority, application Japan, June 14, 1974, 49-68492; Oct. 18, 1974, 49-126293
Int. Cl.² B66C 1/64
U.S. Cl. 294—110 R 3 Claims



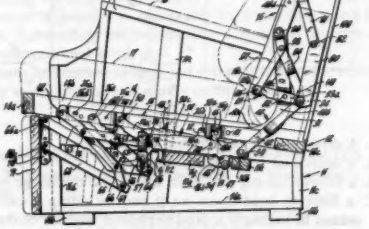
1. A hooked clutch comprising a body including an opposed pair of side plates vertically mounted on a bottom plate, a pantagraph formed by an opposed pair of links and an opposed pair of supporting plates, a ring having its lower ends mounted on a shaft on which the top of said pantagraph also is mounted, said pantagraph having its lower end coupled to said bottom plate of the body, an opposed pair of clutching arms pivoted to said supporting plates at the upper end thereof and having their lower end formed to be a hook, said hooks being disposed opposite to each other, an opposed pair of slide plates mounted to said side plates to be slidable therealong for a limited distance, members for coupling said clutching arms with said slide plates, and automatic changeover means provided on said ring and said slide plates for alternately coupling said slide plates with said ring and uncoupling the former from the latter.

3,942,835

RECLINER RESTER CHAIR WITH PROJECTIBLE LEGREST AND HEADREST, AND HARDWARE THEREFOR

Kenneth S. Harrison, Ridgefield Park, N.J., assignor to Mohasco Corporation, Amsterdam, N.Y.

Filed Dec. 23, 1974, Ser. No. 535,433
Int. Cl.² A47C 1/03
U.S. Cl. 297—61 15 Claims



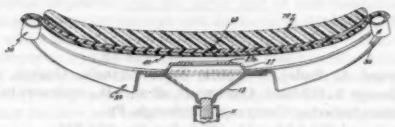
1. Hardware for a chair having an arm, comprising body supporting menas, a mounting plate adapted to be fixed relative to the arm of the chair, linkage connecting said mounting plate with said body supporting means to move said body supporting means rearwardly and to swing the front end of said body supporting means upwardly and its rear end downwardly, relative to the mounting plate from an upright position to a T.V. position; and to move said means from said T.V. position to a fully reclined position; from said fully reclined position back to said T.V. position and from said T.V. position back to said upright position, said body supporting means comprising a seat link and backrest mounting means, a lever pivoted immediately the ends thereof to said backrest mounting means, and having a forwardly extending arm and a rearwardly extending arm, in the upright position of said chair, a headrest actuator link pivoted at its lower end to said mounting plate at a point disposed below the body supporting means in the upright position of said means and pivoted at its upper end to said rearwardly extending arm, and extending upwardly and rearwardly from its pivotal connection to the mounting plate in said upright position, a connecting link pivoted at its lower end to the forwardly extending arm, in said upright position, a headrest bracket, an idler link pivotally connected to the upper end of said headrest bracket and to the upper end of said backrest mounting means, a headrest drive link pivotally connected to the lower end of said headrest bracket and to said backrest mounting means, below the upper end of the latter, and the upper end of said connecting link being pivotally connected to said headrest drive link between the pivoted ends of the latter.

3,942,836

CHAIR

Richard H. Baker, Grand Rapids, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed Apr. 22, 1974, Ser. No. 463,131
Int. Cl.² A47C 1/12
U.S. Cl. 297—445 9 Claims



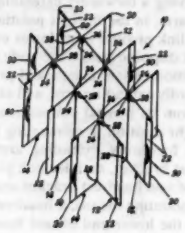
1. A chair comprising: a base having a central, upwardly extending supporting column; a structural, load supporting stretcher operably mounted on said column, said stretcher including struts projecting outwardly towards each side of said chair; a pair of spaced side rails joined to said struts of said stretcher; a rigid supporting seat seated on said side rails and spanning the space therebetween, said seat having only sufficient flexibility to flex slightly when a person using the chair sits on it, thereby giving the chair a comfortably yielding feeling; means securing said supporting seat to both said side rails; a seat support surface on said stretcher positioned below said seat and generally above support column of said base, said seat support surface being operably connected to said seat support column and there being a slight space between said supporting seat and said seat support surface whereby said seat flexes downwardly slightly when a person sits on it and comes to rest on said seat support surface such that said seat support surface transmits a portion of the load imposed on said seat directly downwardly to said supporting column, thereby decreasing the load which has to be carried by said side rails and said struts of said stretcher; said seat support surface on said stretcher comprises the top surface of said stretcher; said stretcher includes an upwardly protruding dome, protruding upwardly towards the bottom of said supporting seat, the top of said dome defining said seat supporting surface; sound deadening material is placed on top of said seat support surface whereby when the bottom of said seat comes to rest on said seat support surface, said sound deadening material minimizes noise.

3,942,837

REINFORCED CONTAINER DIVIDER

Donald W. Engle, Wauwatosa, Wis., assignor to Clevepak Corporation, New York City, N.Y.

Filed Jan. 2, 1975, Ser. No. 537,944
Int. Cl.[2] B65D 5/48, 25/04
U.S. Cl. 229—15 8 Claims



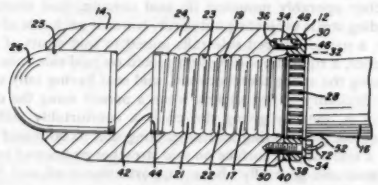
1. A divider for use in a container to divide the internal space of the container having a first partition extending in a first direction and a second partition extending in a direction intersecting the first partition, at least one of the partitions having a score extending transversely of the partition and spaced adjacent to an extremity of the partition, the portion of the partition between the score and the extremity being folded back along the score and joined by a glue bond to the main body of the partition to form an area of increased thickness at an end of the partition to reinforce the partition and strengthen the partition against externally applied forces.

3,942,838

BIT COUPLING MEANS

Edward A. Bailey, Newport; Rene Pertusio, Goshen, and George A. Hibbard, Claremont, all of N.H., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Filed May 31, 1974, Ser. No. 474,895
Int. Cl.[2] E21C 13/00
U.S. Cl. 299—91 11 Claims



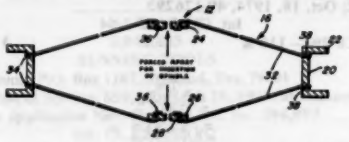
1. In a coupling assembly for coupling a working member in coaxial alignment with an elongated force transmitting member, the improvement comprising: rigid means adapted to receive portions of said members within respective axial end portions thereof and cooperable with respective adjacent peripheral surfaces of said members to maintain said coaxial alignment; locking means having an internal portion thereof cooperable with an adjacent external portion of said force transmitting member to provide a selectively adjustable circumferential alignment therebetween; and securing means cooperable with portions of said rigid means and said locking means to positively maintain said selectively adjustable circumferential alignment and to maintain a circumferential alignment between said rigid means and said locking means.

3,942,839

SPOKED WHEEL AND METHOD OF MAKING SAME

Thomas O. Chalk, P.O. Box 446, St. Cloud, Fla. 32769

Filed July 30, 1974, Ser. No. 493,669
Int. Cl.[2] B60B 1/06
U.S. Cl. 301—73 2 Claims



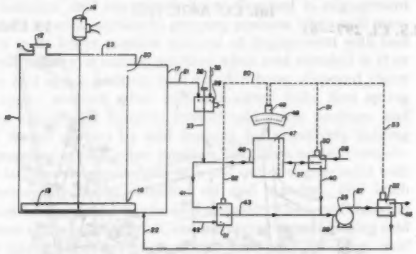
1. A spoked wheel comprising an annular rim of rigid construction, a central hub assembly, and a plurality of radially extending spokes interconnecting the rim and hub assembly, said spokes being of fixed, non-adjustable length, said hub assembly including spaced end flanges having a spindle extending therebetween, said spokes being wire members with a plurality of wire members extending from each of the flanges to the rim and being equally tensioned by expanding the distance between the flanges when positioning the spindle therebetween, each of said spokes being of generally U-shaped configuration with parallel wire members interconnected by an outer end wire portion of relatively short length with the two wire members being inserted radially inwardly through spaced holes in the rim, the two wire members having inner free ends connected to a flanges of the hub assembly, and a blade mounted on each pair of wire members extending from the rim to one of the flanges, each blade being in the form of an airfoil and disposed only toward the outer portion of the spokes, each blade being hollow and in the form of an envelope with the wire members being disposed in the leading and trailing edges thereof, and an inner rim at the inboard tips of the blades and disposed between the wire members defining each spoke to enable variation in pitch of the blades from their outboard tips to their inboard tips.

3,942,840

DOWN-LOADING DEVICE

Allen Foster, Berkeley, Calif., assignor to Clark Technical Incorporated, Richmond, Calif.

Filed Feb. 18, 1975, Ser. No. 550,443
Int. Cl.[2] B65G 53/16
U.S. Cl. 302—3 6 Claims



1. A down loader comprising
A. a source of air-fluffed down,
B. a blower having a suction side and a discharge side,
C. a filter to hold down on it and including a calibration means to measure a predetermined amount of down,
D. means connected to the suction side of said blower for drawing down from said source and into said filter in a forward direction,
E. means connected to the suction side of said blower to draw air through said filter in the reverse direction from

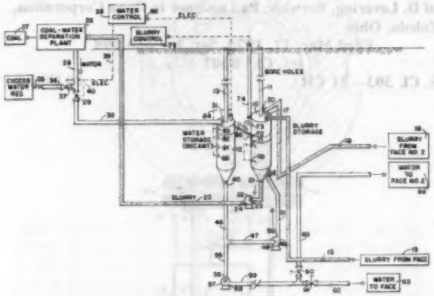
said forward direction, thereby to entrain said predetermined amount of down in air,

F. means connected to the discharge side of said blower to direct air having a predetermined amount of entrained down to a down-loading station.

3,942,841
SLURRY HANDLING SYSTEM

David L. McCain, and Hilbert D. Dahl, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Apr. 23, 1974, Ser. No. 463,325
Int. Cl.² B65G *53/30*
U.S. Cl. 302—14 **3 Claims**



1. An improved slurry handling system under the surface of the earth comprising:

a. a first vertical cavity means formed under the surface of the earth and having a vent means communicating with said surface;

b. a second vertical cavity means formed under the surface of said earth and having a second vent means communicating with said surface;

c. slurry input means communicating with the upper portion of said first vertical cavity;

d. slurry outlet means communicating with the lower portion of said first vertical cavity;

e. means connected to said slurry outlet for moving slurry out of said first vertical cavity and to the surface of said earth;

f. selectively controlled inlet water means communicating with said second vertical cavity;

g. water outlet means communicating with the lower portion of said second vertical cavity;

h. decant means communicating between the upper portions of both said first and second vertical cavity means;

i. slurry level indication means positioned in said first vertical cavity means;

j. water level indicator means positioned in said first and second vertical cavity means;

k. means responsive to said water level and said slurry level for maintaining said respective water and slurries at a predetermined level; and

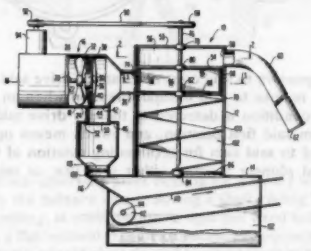
l. means connected to said water outlet means for reslurrying said slurry at said slurry outlet means.

3,942,842
INDUSTRIAL VACUUM LOADING APPARATUS

Henry T. Young, Jr., 34 Marlborough St., Montgomery, Ala. 36109

Filed Aug. 3, 1971, Ser. No. 168,579
Int. Cl.² B65G *53/60*
U.S. Cl. 302—62 **3 Claims**

1. In a vacuum operated industrial loading apparatus of the type including a vacuum conduit system having an open inlet and exhaust fan means for creating a flow of air through the system from the open inlet, an enlarged separation chamber having an inlet and an air outlet connected in the conduit system and a material discharge outlet in the bottom wall thereof and spaced from the air outlet, a first filter screen mounted over the air outlet for filtering a solid material from air flowing through the separation chamber and a paddle wheel assembly mounted for rotation about a fixed axis within the separation chamber and including a plurality of radially extending arms cooperating with the walls of the separation chamber to define a plurality of individual conveyor chambers each movable successively past the filter screen to remove solid materials collected thereon and the discharge outlet to discharge the removed materials while maintaining at least a partial air lock between the material discharge outlet and the air outlet, the improvement comprising secondary air lock means including an elongated conduit having one end positioned over and communicating with said discharge outlet, said conduit extending downwardly from said bottom wall and terminating in an open bottom end, an elongated screw conveyor mounted within said conduit, said screw conveyor having a low pitch and normally acting to retard the flow of solid materials deposited into the upper end of said conduit and onto said conveyor through said discharge outlet by said paddle wheel assembly, and drive means for rotating said screw conveyor to convey the solid materials downwardly through said conduit to be discharged through said open bottom end whereby solid materials deposited onto said screw conveyor collect thereon and cooperate therewith to form said secondary air lock between said air outlet and the open end of said conduit, and wherein said separation chamber comprises a substantially cylindrical upright housing having a substantially cylindrical side wall and top and bottom end walls and having an opening in said side walls defining said air outlet, said filter screen being mounted over said air outlet in said side wall, said inlet being formed in said top wall and said discharge outlet being formed in said bottom wall at a point circumferentially spaced from said inlet and from said air outlet.



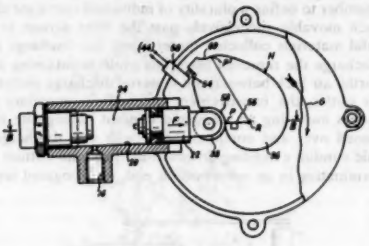
3,942,843
METHOD OF BRAKING A VEHICLE HAVING AN ANTISKID BRAKE CIRCUIT, AND A MODULATOR FOR SUCH A CIRCUIT

Andre Tobiasz, Le Blanc-Mesnil, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed June 5, 1974, Ser. No. 476,358
Claims priority, application France, June 6, 1973, 73.20579
Int. Cl.² B60T *8/04*
U.S. Cl. 303—21 F **16 Claims**

1. In a vehicle antiskid braking system, a modulator comprising a housing defining a modulating chamber therewithin, said housing having an inlet and an outlet communicating said modulating chamber to a pressure source and to the brakes of the vehicle respectively, valve means within said housing for controlling communication between the inlet and outlet, a plunger slidably mounted in said modulating chamber for controlling the fluid pressure level at said outlet, said plunger being shiftable between first and second positions to hold said valve means open when the plunger is disposed in the first position, said valve means closing when the plunger is moved away from the first position, driving means for actuating said

plunger, said driving means including a rotatable cam operably connected with said plunger, an electric motor for driving said cam, said motor normally driving said cam in a normal direction moving said plunger to said first position, control means for detecting an incipient skidding condition of a vehicle wheel and operatively connected to said motor, said motor



being responsive to said control means to drive said cam in a direction reverse to said normal direction when an incipient skidding condition is detected to thereby drive said plunger away from said first position, and switch means operatively connected to said cam for terminating rotation of the latter when said plunger reaches either said first or said second positions.

3,942,844

ANTI-SKID CONTROL SYSTEMS INCLUDING AN EMERGENCY ACCUMULATOR FOR BRAKING AND SKID CONTROL OPERATIONS

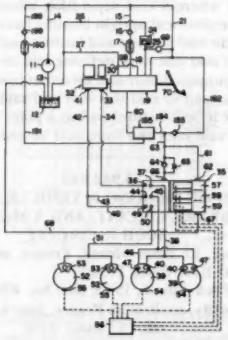
Masami Inada, Toyoake, and Toshiyuki Kondo, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Japan

Filed Aug. 15, 1974, Ser. No. 497,639

Claims priority, application Japan, Aug. 21, 1973, 48-94070; Aug. 22, 1973, 48-94081

Int. Cl.² B60T *8/06*

U.S. Cl. 303—21 AF **11 Claims**



8. An antiskid control system for a motor vehicle driven by a driver comprising:

a source of fluid pressure;

a brake master cylinder;

brake booster means disposed between said source of fluid pressure and said brake master cylinder and having means for controlling hydraulic fluid flow from said source of fluid pressure according to control by the driver to actuate said brake master cylinder;

computer means for sensing skid condition of wheels of the motor vehicle to issue a signal according to said skid condition;

actuator means disposed between said brake master cylinder and said wheels to supply fluid pressure therethrough to said wheels for braking operation and directly deriving from said brake booster means hydraulic fluid for actuation thereof, said actuator means having means for controlling fluid pressure from said brake master cylinder to said wheels according to the signal of said computer means, and

bypass means for supplying fluid pressure from said brake master cylinder to said wheels in the event said source of fluid pressure fails.

3,942,845

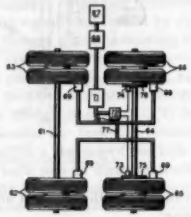
TANDEM AXLE ANTI-SKID SYSTEM

Paul D. Levering, Berwick, Pa., assignor to Dana Corporation, Toledo, Ohio

Filed Mar. 17, 1975, Ser. No. 558,898

Int. Cl.² B60T *8/22*

U.S. Cl. 303—21 CH **14 Claims**



1. An anti-skid system for a vehicle having a load supporting tandem axle unit, comprising:

means for transferring a selected portion of the vehicle load to one of the axles of said tandem axle unit during braking whereby the load imposed on said one axle exceeds the load imposed on the other axle of said tandem axle unit;

sensing means for sensing the rotational velocity of a wheel attached to said other axle and generating an output signal representative of the sensed velocity;

control means responsive to said output signal for detecting a skid condition at said wheel attached to said other axle and generating a control signal in reponse thereto; and

actuating means responsive to said control signal for modulating the brakes at said wheel attached to said other axle and a wheel attached to said one axle.

3,942,846

BALL RACE

Richard Wilke, Am Weissenfeld 4, 583 Schwelm, and Helmut Korthaus, Fernblick 3, 56 Wuppertal-Barmen, both of Germany

Filed Dec. 2, 1974, Ser. No. 528,895

Claims priority, application Germany, Nov. 30, 1973, 2359678

Int. Cl.² F16C *17/00*

U.S. Cl. 308—6 C **4 Claims**

1. A ball-bearing assembly comprising:

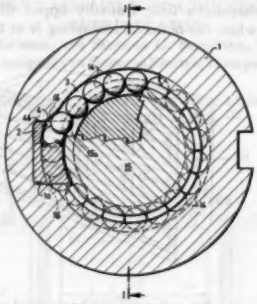
a screw with a helical thread formed by depressed turns separated by ridges;

a nut coaxially surrounding said screw, said nut having an inner surface provided with an elongate cutout bounded by edges parallel to the screw axis and with a helical groove of the same pitch as said thread, said cutout spanning a pair of adjacent turns of said thread, said groove forming a looped trackway terminating at said parallel edges;

an elongate bridge piece matingly received in said cutout and provided with an open-ended recess of constant width and depth communicating with said groove and

complementing said trackway to a closed guide path, said recess having lateral boundaries in parallel planes skew to the screw axis; and

an endless series of balls adjoining one another along said guide path with freedom of bidirectional movement through said groove, said balls being of like diameter substantially equaling the depth and width of said recess



but larger than the depth and width of said groove whereby the balls passing through said groove project from said inner surface into turns of said thread aligned therewith;

said groove deepening at said parallel edges to the level of the bottom of said recess for facilitating the transition of said balls between said adjacent turns across the intervening ridge.

3,942,847

TEMPERATURE COMPENSATING CERAMIC METAL BEARING SYSTEMS

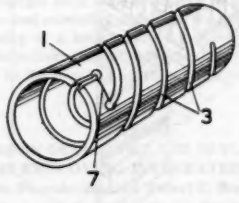
Norman Lawrence Parr, Surbiton, England, assignor to National Research Development Corporation, London, England

Filed Jan. 18, 1974, Ser. No. 434,645

Claims priority, application United Kingdom, Jan. 19, 1973, 2780/73

Int. Cl.² F16C *1/24*

U.S. Cl. 308—9 **11 Claims**



1. A temperature compensating bearing assembly for a shaft comprising a bearing housing, and an expandable helical ceramic member located within said bearing housing and providing a bearing surface.

3,942,848

SHOCK ABSORBING PIVOT BEARING FOR ROTARY WATCH PARTS

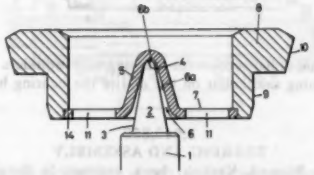
Francois Voumard, Le Locle, Switzerland, assignor to Seitz S.A., Les Brenets, Switzerland

Filed Apr. 8, 1974, Ser. No. 459,025

Claims priority, application Switzerland, Apr. 6, 1973, 4956/73

Int. Cl.² F16C *17/08, 27/08*

U.S. Cl. 308—159 **10 Claims**



1. A shock-absorbing pivot bearing for a rotary watch part, especially the balance wheel, having a shaft ending in a pivot tip, comprising, in combination: a rigid and fixed hollow body member; a flat resilient member substantially perpendicular to the pivot axis of said pivot tip and having a peripheral portion secured to said body member and a circular inner portion normally resting in an unstressed central position within said body member, said inner portion being freely and resiliently yieldable away from said centered position in an axial direction and in a tilting direction about any one of its diameters; a bearing member carried by said resilient member and projecting substantially perpendicularly from the inner portion thereof away from the watch part pivoted in the bearing, said bearing member having an inner surface surrounding a space for receiving said pivot tip and adjacent shaft portion, said inner surface being more splayed than the shaft portion entering the space it surrounds, in order that the frictional engagement between the pivot and its bearing occurs substantially exclusively at a point of the pivot tip and a point of said inner surface of the bearing member remote from said resilient member; and radial abutting means comprising the wall of a circular opening which surrounds and is spaced from said shaft section, a radial impact thus causing the pivot tip and the part of the bearing member remote from the resilient member to move together in a direction substantially perpendicular to the bearing axis, the inner portion of said resilient member tilting about its diameter which is perpendicular to the direction of the impact, said resilient member being bent only until said shaft section engages said radial abutting means.

3,942,849

AUXILIARY SEALING STRUCTURE FOR A SHAFT BEARING

Lester W. Doyle, and Bernard T. Veldman, Sr., both of Mishawaka, Ind., assignors to Reliance Electric Company, Mishawaka, Ind.

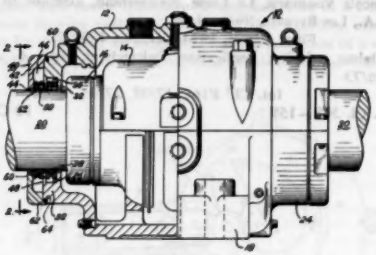
Filed Sept. 23, 1974, Ser. No. 508,505

Int. Cl.² F16C *1/24, 33/72*

U.S. Cl. 308—187.1 **11 Claims**

1. An auxiliary sealing structure for a shaft bearing having a housing, comprising a collar having two sections for encircling a shaft and having an inwardly facing recess, a seal disposed in said recess for engaging the surface of the shaft, an outwardly radially facing shoulder on the end of the bear-

ing housing, an inwardly radially facing shoulder on said collar for engaging the shoulder on the housing, and means interconnecting said collar section for securing said shoulders together and retaining said collar on the end of the bearing housing.

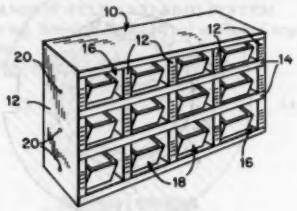


3,942,850
BEARING AND ASSEMBLY
James R. Minard, Keokuk, Iowa, assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Sept. 6, 1974, Ser. No. 503,995
Int. Cl.² F16C *27/06*
U.S. Cl. 308—238 **8 Claims**

1. A bearing strip for a bearing assembly comprising:
an elongated strip of elastomeric material generally rectangular in section and having generally parallel faces and generally parallel edges;
each edge having a longitudinal slot formed therein and extending substantially the length thereof;
a metal insert in said strip reinforcing each slot;
a metal member in said strip joining the metal inserts reinforcing said slots;
a plurality of said strips being adapted for placement in a side-by-side relationship in a housing with adjacent of said edges facing and abutting one another and with adjacent of said slots in alignment with one another to form a keyway; and
a key received in each slot to retain the strips in said housing.

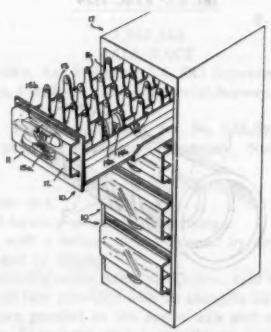
3,942,851
INDICATING STORAGE BIN
Louis Kaplan, 67-23 211th St., Bayside, N.Y. 11369
Continuation-in-part of Ser. No. 304,071, Nov. 6, 1972, abandoned. This application Aug. 2, 1974, Ser. No. 494,129
Int. Cl.² A47F *3/14, 5/12*
U.S. Cl. 312—120 **8 Claims**

1. A storage bin assembly for the type of material of which a portion may be removed at a time leaving a remainder of the material, said storage bin assembly comprising:
a. a first member in the form of an open fronted cabinet including divider means that define a plurality of recesses;
b. a plurality of second members each in the form of a bin positioned in each said recess, each said bin including a pair of spacedly opposed side walls, a bottom wall, a rear wall and a front wall having quantity indicating means thereon cooperating with said divider means for providing a visual approximation of the quantity of material remaining in each said bin; and
c. support means defined by hanger means integral with said bins and rod means supported by the said cabinet; said hanger means including a plurality of opposed pairs of notches, said rod meand fitting into selected pairs of the notches and pivotly mounting each said bin in said respective recess, said hanger means being supported on said rod means such that each said bin is adapted to assume and remain in, absent an external force being applied thereto, a first, frontally tipped down working position when the material remaining is at the front end



thereof, a second, substantially horizontal position when empty of the material, said second position being visibly different than said first position whereby each said bin in said first position will be at an angle with respect to said second position, the size of said angle being proportional to the quantity of material remaining in each said bin to thereby provide said visual approximation of the quantity of material remaining, each said bin being freely movable from said first position towards said second position as the quantity of material remaining is reduced and a third frontally tipped up storage position when the material remaining is at the rear end thereof, said third position being visibly different than either said first or said second positions.

3,942,852
CABINET DRAWER
Roy Anthony, Briarcliff Manor, N.Y., assignor to Uniroyal, Inc., New York, N.Y.
Filed Dec. 4, 1974, Ser. No. 529,326
Int. Cl.² A47F *3/00*; A47B *81/00*
U.S. Cl. 312—294 **4 Claims**



4. A cabinet having a plurality of cabinet drawers in a vertical column in which each of said cabinet drawers comprises:
an opaque front panel covering the contents of the drawer and having attached in front thereof a transparent com-

partment, having a transparent front wall, for holding at least one shoe for display; and

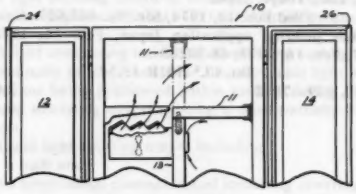
a plurality of interior compartments in each drawer, each interior compartment being capable of holding a pair of shoes;

said interior compartments including vertical portions for bearing indicia relating to the shoes in said interior compartments.

3,942,853
GASKET ASSEMBLY OF A HOUSEHOLD REFRIGERATOR

Bernard J. Grimm, and Stephen G. Boughton, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jan. 27, 1975, Ser. No. 544,067
Int. Cl.² F25D *11/02*
U.S. Cl. 312—296 **6 Claims**



1. In an improved gasket assembly for adjacent doors of a household refrigerator-freezer, said gasket assembly having first and second gasket elements each associated with a respective door, each gasket element having a longitudinally extending insulating chamber, a magnet chamber, a magnet positioned in the magnet chamber, means connecting each magnet chamber to its respective insulating chamber, and means connecting each gasket element to its respective door, said magnets being opposed one to the other and each of said magnet chamber connecting means being of a length sufficient for contacting the magnet chambers one with the other in the installed position on closed doors, the improvement comprising:

a pair of second longitudinally extending insulating chambers each having first and second sides and being connected along the first side to the insulating chamber of a respective gasket element with the second side being in contact with an inner surface of the respective door in the installed position on the door, said insulating chambers extending across an inner side of their respective magnet chamber for separating the magnet chambers from the refrigerator food compartments; and

a pair of flanges each connected to a respective insulating chamber and extending outwardly therefrom, said flanges each being of a length sufficient for extending behind their respective magnet chamber and contacting one another in the installed position on closed doors.

3,942,854
HOLD DOWN DEVICE FOR USE IN ELECTRONIC SYSTEMS EMPLOYING INTEGRATED CIRCUITS

Peter P. Klein, Phoenixville, and Robert E. Braun, Norristown, both of Pa., assignors to Burroughs Corporation, Detroit, Mich.

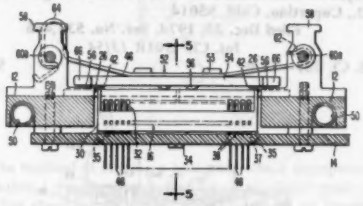
Filed Oct. 9, 1974, Ser. No. 513,282
Int. Cl.² H01K *1/12*
U.S. Cl. 339—17 CF **8 Claims**

1. A hold down device for use in a system which includes at least one electronic component installed in a connector and which incorporates a cooling frame comprising:

a plurality of bracket means mounted adjacent said cooling frame for supporting a plurality of spaced-apart parallel rods,

said connector being located in the space between an adjacent pair of rods,

a spring-like member formed in a shallow, upright, truncated V configuration, one end of said spring-like member being centrally notched in a U-shaped configuration such that the extremities of the legs of the U are pivotally



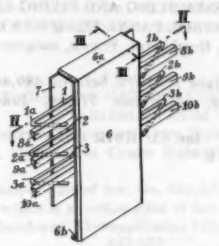
wrapped around one of said pair of spaced-apart rods, the opposite end of said member being configured in a manner to latch on the other of said pair of rods in opposition to the force of said spring-like member exerted on said electronic component,

said spring-like member being disposed in substantial alignment with said electronic component whereby the latching of said member applies a force to said component of sufficient magnitude to insure electrical continuity between said component and connector.

3,942,855
TOOL-FREE DETACHABLE ELECTRIC POWER CONNECTOR

Philippe de Villemeur, Maisons Alfort, France, assignor to Etablissements A. Gregoire & Barilleau

Continuation of Ser. No. 420,943, Dec. 3, 1973, abandoned.
This application Apr. 9, 1975, Ser. No. 566,385
Int. Cl.² H01R *13/06*
U.S. Cl. 339—21 R **5 Claims**



1. Tool-free detachable connector comprising

a housing having a front face, a rear face spaced from and extending parallel to said front face and block means connecting said front and rear faces;

a plurality of wires each having a section embedded in said block means and end sections extending longitudinally from said block means;

said wires each consisting of a steel core having a tensile strength greater than 80 kilograms per square millimeter and each said core having a copper layer thereon with a thickness greater than 0.3 millimeter; and

each said end section of each said wire comprising two straight connected arms, the first straight arm being a longitudinal extension of said section embedded in said

block means, and the second straight arm forming an acute angle with said first straight arm and thereby defining a resilient loop, each said arm adapted to provide longitudinally extending electrical contact as a connector.

3,942,856

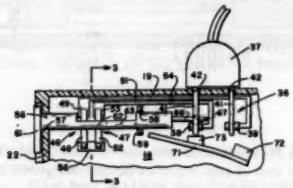
SAFETY SOCKET ASSEMBLY

Daniel J. Mindheim, deceased, late of San Jose, Calif., and by Joyce E. Mindheim, executrix, 20020 Rodrigues Ave., Apt. D., Cupertino, Calif. 95014

Filed Dec. 23, 1974, Ser. No. 535,486

Int. Cl.² H01R 13/54

U.S. Cl. 339—74 R **9 Claims**



1. In a safety socket assembly: a socket for receiving the prongs of the connecting plug of an electrical appliance, a set of contacts for connecting the socket to a source of electrical energy when closed, a control arm movablee relative to the contacts and socket between extended and retracted positions and between first and second rotative positions, a cam carried by the control arm for holding the contacts in a closed position when the control arm is extended and in its first rotative position, the contacts being open when the control arm is retracted or in its second rotative position, a pin carried by the control arm positioned to extend through an opening in one of the prongs of a plug inserted in the socket to prevent removal of the plug when the control arm is in its extended position, and means for preventing movement of the control arm to the extended position when no plug is in the socket.

3,942,857

DEVICE FOR ASSEMBLING AND FIXING ELECTRICAL CONTROL PANEL EQUIPMENT

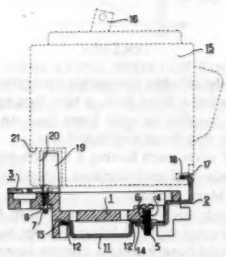
Jean Hennemann, Hombliéres, France, assignor to UNELEC, Paris, France

Filed June 17, 1974, Ser. No. 480,446

Claims priority, application France, June 15, 1973, 73.21952

Int. Cl.² H01R 13/54

U.S. Cl. 339—75 R **8 Claims**



1. A device for mounting electrical equipment on a channel iron having at least one lateral flange of varying shape and dimensions comprising:

a. a stand portion of insulating material;

b. a mechanical gripping part located adjacent a first end of said stand portion, said gripping part having a first portion to grip said electrical equipment and an integral, second portion to grip said channel iron;

c. adjustable means to fasten said mechanical gripping part to said stand portion such that said mechanical gripping part is adjustable with respect to said stand portion and such that a portion of the lateral flange is engaged between the mechanical gripping part and the stand portion; and

d. an electrical contact part affixed to said stand portion adjacent a second end of said stand portion such that said electrical contact part engages a corresponding electrical connector in said electrical equipment.

3,942,858

LAMP SOCKET

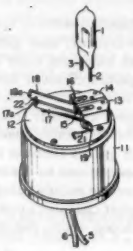
Teruo Ouchi, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 14, 1974, Ser. No. 442,627

Claims priority, application Japan, Feb. 16, 1973, 48-20287; Feb. 16, 1973, 48-20288

Int. Cl.² H01R 13/54

U.S. Cl. 339—75 R **2 Claims**



1. A lamp socket having a body comprising:

at least one fixing member mounted on said body having groove means for receiving the base pins of a lamp with said base pins each having a longitudinal axis;

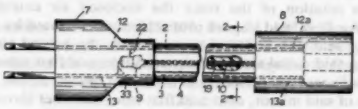
at least one pushing member having at least one lever arm and an end portion inserted in said groove means, said pushing member being pivotally mounted, adjacent to said fixing member, about an axis which extends substantially prependicular to the longitudinal axis of the base pins, spring means mounted on said fixing member, said spring means normally biasing said pushing member against the base pins of a lamp inserted in said groove means to thereby bias the base pins against said fixing member with said spring means applying a force to said pushing member in a generally longitudinal direction relative to the axes of the base pins, said pushing member being releasable from biasing the base pins against said fixing member when said pushing member is displaced a predetermined distance against the applied force of said spring means to thereby permit a substantially resistance free insertion of the base pins within the said groove means in a substantially resistance free removal of the base pins from said groove means.

3,942,859

ELECTRICAL CONDUCTOR WITH LIGHT INDICATING MEANS

Miklos B. Korodi, 440 E. 79th St., New York, N.Y. 10017

Filed Nov. 11, 1974, Ser. No. 522,903
Int. Cl.² H01R 3/00
U.S. Cl. 339—113 L 3 Claims



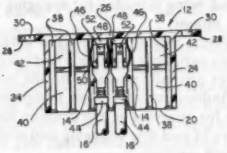
1. An electrical conductor including
(a) at least one elongated conductor member;
(b) an insulating covering on said conductor member;
(c) light emitting means in electrical communication with said conductor member said light emitting means including
(d) light conducting means for conducting said light longitudinally of said conductor member, said light emitting means being positioned within said insulating covering, said insulating covering being at least partially transparent,
(e) said light emitting means including
(f) a bulb and
(g) a longitudinal channel in said insulating covering and at least partially aligned with said bulb, and
(h) at least one optical fiber in said longitudinal channel.

3,942,860

CONNECTOR ASSEMBLY

Cletus G. McDonough, Elmhurst, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed Oct. 4, 1974, Ser. No. 512,179
Int. Cl.² H01R 9/08
U.S. Cl. 339—217 S 6 Claims



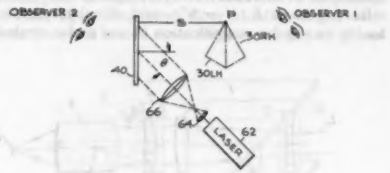
1. A push-type terminal connector assembly comprising:
a terminal housing made of insulating material including a terminal receiving receptacle adapted to receive a plurality of terminals, a plurality of transverse positioning means associated with said receptacle for dividing said receptacle into a plurality of adjacent terminal receiving stations, and detent means adapted to engage a portion of a terminal for positioning and holding a terminal in a receiving station at a given depth; and
a plurality of like terminals, each adapted to be plugged into said terminal receiving stations and each including biasing means adapted to electrically connect and press against the biasing means on a terminal plugged in an adjacent receiving station, andd interengaging means cooperating with said detent means for positioning and holding said terminal in said receptacle at a given depth.

3,942,861

FULL VIEW HOLOGRAM

Nicholas George, Pasadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Continuation of Ser. No. 36,779, May 13, 1970, abandoned.
This application Mar. 22, 1974, Ser. No. 453,642
Int. Cl.² G03H 1/28, 1/20
U.S. Cl. 350—3.5 9 Claims



1. The method of making a hologram which asymptotically approaches a 4π steradian hologram of an object space on a single flat sheet, wherein said object space is an imaginary sphere enclosing all objects being recorded,
recording on a first sheet of sensitive material the wavefront emanating from substantially one entire half of said object space,
placing said first sheet of sensitive material adjacent to and spaced from one side of a second flat sheet of sensitive material,
holographically recording on said second sheet of sensitive material the image on said first sheet of sensitive material,
holographically recording on a third sheet of sensitive material the wavefront emanating from substantially the other half of said object space,
placing said third sensitive sheet adjacent to and spaced from the other side of said second sheet of sensitive material, and
holographically recording on said second flat sheet of sensitive material the image on said third sheet of sensitive material, said steps of placing and holographically recording the images on said first and third sheets of sensitive material on said second flat sheet of sensitive material being performed to maintain the relative spatial orientation of said objects space whereby an object within the object space appears to be in the same location when the holograms recorded on said second sheet of sensitive material are viewed from opposite sides thereof.

3,942,862

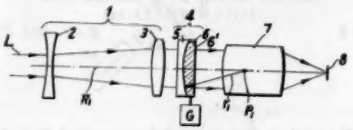
IMAGE STABILIZING OPTICAL SYSTEM HAVING A VARIABLE PRISM

Hiroshi Furukawa, Tokyo, and Akira Tajima, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 405,631, Oct. 11, 1973, abandoned, which is a continuation of Ser. No. 209,619, Dec. 20, 1971, abandoned. This application Feb. 14, 1974, Ser. No. 442,605
Claims priority, application Japan, Dec. 28, 1970, 45-128422
Int. Cl.² G02B 23/00
U.S. Cl. 350—16 9 Claims

1. An image stabilizing lens system for an optical instrument with an image forming lens system therein comprising an afocal telescopic system section and a deflecting means arranged in this order from the front in front of said image forming lens system, said deflecting means having an entrance flat surface and an exit flat surface, one of said flat surfaces being stabilized by coupling a portion of said deflecting means with a stabilizer for maintaining said flat surface in fixed spatial alignment with an original line-of-sight of said optical instrument despite accidental motion of said instrument, the other of said flat surfaces being fixed to said optical instru-

ment along the optical axis of the instrument, said deflecting means having a refractive index of less than 2, and, by defining the difference between the position of the optical axis of said instrument and the optical line-of-sight of said optical instrument created by an accidental motion as the value δ, said entrance and exit flat surface of said deflecting means for being oriented as a result of instrument motion so that a cross angle is formed by said entrance flat surface and said exit flat surface so as to refract a ray of light to the extent of the refracting angle $\delta (N - N')$, said afocal telescopic system having an angular magnification M and a plus symbol is indi-



cated when an erecting afocal telescopic system is used while a minus symbol is indicated at the employment of an inverting system to said afocal telescopic system, said afocal telescopic system satisfies the equation: $M = \pm (N - N')$ wherein N is the index of refraction of said deflecting means, wherein N' is the index of refraction of a medium in which the entire lens system is placed, wherein an angle formed by a ray of light emitted from the afocal telescopic system and the optical axis thereof is equal to the refracting angle of said deflecting means when said entire system is in said medium, and wherein the ray of light emitted from the deflecting means is always parallel with the optical axis.

3,942,863

ARRANGEMENT FOR A ROTATING AUTOMOBILE MIRROR

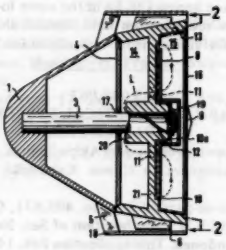
Fritz Schuwerk, Jutastrasse 26, 8 Munich 2, Germany

Filed July 12, 1974, Ser. No. 487,882

Claims priority, application Germany, Mar. 29, 1974, 2415407

Int. Cl.² G02B 5/08; B60R 1/06

U.S. Cl. 350—62 **6 Claims**



1. A vehicle rear view mirror construction comprising an outwardly reflecting mirror supported in an enclosed generally cylindrical rotor journalled for rotation through a hub upon a central shaft, said shaft being supported in a housing for said rotor, said housing forming at its periphery one or more scoops adapted to receive and direct air from the slipstream adjacent a vehicle in motion, said rotor having a side wall surmounted by a plurality of vane members located in proximity to said air scoops, said vane members providing rotational motion to said rotor under the influence of the vehicular slipstream, said rotor being generally subdivided along the axis of revolution into first and second chambers by a central radially disposed wall integral with said hub, said first chamber being bounded by said central wall, said mirror and said rotor side wall, and said second chamber being bounded by said central wall, said rotor side wall, and the rotor rear wall, said first and second chambers being in communication in the region adjacent the axis of rotation through perforations in the center wall, said hub and said central shaft having defined therebetween a groove forming a passageway between said first and second chambers, said passageway terminating in said first chamber in at least one radial air channel, the radial outer end thereof being open and communicating with said first rotor chamber at the periphery thereof, whereby upon rotation of the rotor the enclosed air entering said groove from said second rotor chamber is heated by passage along said hub and said central shaft, the heated air passes along said radial air channels, exits into said first rotor chamber adjacent the periphery of said rotor, passes across the rear face of said mirror, exits said first rotor chamber through said perforations and is recirculated by entry into said groove from said second rotor chamber.

3,942,864

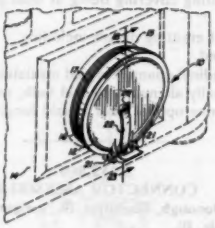
LENS CAP FOR OPTICAL INSTRUMENTS WITH PIVOTALLY MOUNTED LENS COVER

Jody L. Numbers, 2212 S. Priest, Tempe, Ariz. 85282

Filed Oct. 15, 1974, Ser. No. 514,589

Int. Cl.² G03B 11/04

U.S. Cl. 350—65 **2 Claims**



1. A lens cap for mounting on the lens mount of a camera comprising:

a tubular cylindrical member for attaching at one end on the front end of the lens mount of the camera,

said one end being threaded for engaging mating threads on the lens mount,

said cylindrical member defining a ledge at its other end around its periphery forming a lens cover seating surface,

a lens cover pivotally mounted on the outside periphery of said cylindrical member and comprising a substantially flat disc for covering in one position the camera lens, the periphery of said disc engaging said seating surface in lens cap closed position,

said disc having a protrusion extending from its peripheral edge for interfitting with a receiving member on the periphery of said cylindrical member to provide the pivotal mounting of said lens cover, and

spring means extending between said lens cover and said cylindrical member for biasing said disc to one of its lens open and lens closed positions,

said spring means comprising an arcuate shaped spring, one end being attached to the periphery of said member and its other end being connected to said disc,

said lens cover being provided with a lever arm extending outwardly from its periphery,

whereby said lens cover may be pivotally moved by the user applying finger pressure on said lever arm against the biasing action of said spring to pivotally move said lens cap,

said lever arm defining a slot, and

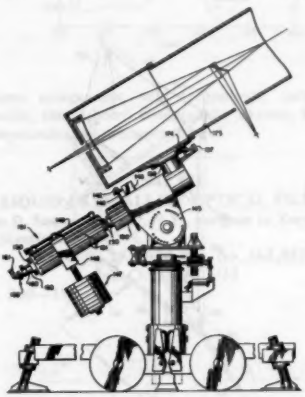
one end of said spring means extending through said slot of said lever arm to said cylindrical member.

whereby said spring means is retained and the amount of its deflection is controlled by the sides of said slot when said lens cover is moved to open and closed positions.

3,942,865
PORTABLE TELESCOPE

Alan E. Rand, 6479 Peachtree Industrial Blvd., Atlanta, Ga. 30340

Continuation of Ser. No. 229,341, Feb. 25, 1972, Pat. No. 3,840,284. This application Sept. 23, 1974, Ser. No. 508,046
The portion of the term of this patent subsequent to Oct. 8, 1991, has been disclaimed.
Int. Cl.² G02B 23/16
U.S. Cl. 350—83 **5 Claims**



1. A portable telescope assembly comprising portable support means, a polar axis shaft mounted on said portable support means, means for rotating said polar axis shaft with respect to said portable support means about a vertical axis and for tilting said polar axis shaft intermediate its ends about a horizontal axis to orient the polar axis shaft parallel to the axis of rotation of the earth, a declination axis shaft mounted on one end of said polar axis shaft and extending perpendicular to said polar axis shaft, a telescope displaced from one side of said polar axis shaft and mounted on said declination axis shaft with its sight axis perpendicular to said declination axis shaft, means for revolving said telescope and said declination axis shaft about said polar axis shaft and for rotating said telescope on said declination axis shaft while maintaining the sight axis of said telescope in a plane parallel to said polar axis shaft, a counterweight assembly mounted on said polar axis shaft and including removable weights positioned on the side of said polar axis shaft opposite to said telescope and on an end portion of said polar axis shaft opposite to said telescope to balance said telescope about the longitudinal axis of said polar axis shaft and about said horizontal axis, the weight of said counterweight assembly being movable along the length of the polar axis shaft and toward and away from the polar axis shaft.

3,942,866
FIBER-OPTICAL STRUCTURE OF HIGH APPARENT POWER OF RESOLUTION

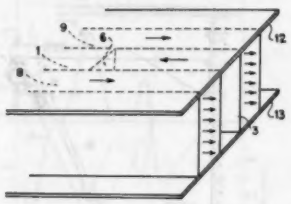
Paul Roman, Paris, France, assignor to Thomson-CSF Visualisation et Traitement des Informations (T-VT), Paris, France

Filed Jan. 30, 1974, Ser. No. 437,884
Claims priority, application France, Feb. 2, 1973, 73.03716
Int. Cl.² G02B 5/16
U.S. Cl. 350—96 B **3 Claims**

1. A fiber-optical structure comprising:

a pair of light-transmitting fiber bundles originating at a source of illuminating flux;

a light-receiving fiber bundle bracketed by said light-transmitting fiber bundles for picking up reflected flux from an object illuminated by said light-transmitting fiber bundles, said light-receiving fiber bundle terminating at a receiver for the reflected flux, all said fiber bundles being of rectangular cross-section with coextensive contacting sides, said light-transmitting fiber bundles having ends remote from said source extending beyond an end of said



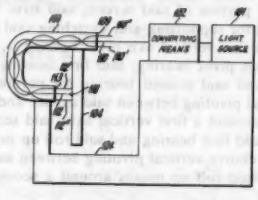
light-receiving fiber bundle remote from said receiver for forming two opposite light-absorbing boundaries of a light-guiding channel traversed by the reflected flux, said remote end of said light-receiving fiber bundle being directly exposed to incident light; and

a pair of parallel shield plates with light-absorbing surfaces overlying opposite sides of said fiber bundles transverse to said contacting sides and extending to said remote ends of said light-transmitting fiber bundles, thereby forming two other boundaries of said light-guiding channel.

3,942,867
OPTICAL MEMORY APPARATUS

Yuzo Ono, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 18, 1974, Ser. No. 533,993
Claims priority, application Japan, Dec. 27, 1973, 48-1346; Dec. 27, 1974, 48-1532[U]; Dec. 27, 1973, 1533[U]
Int. Cl.² G02B 5/14
U.S. Cl. 350—96 GN **8 Claims**

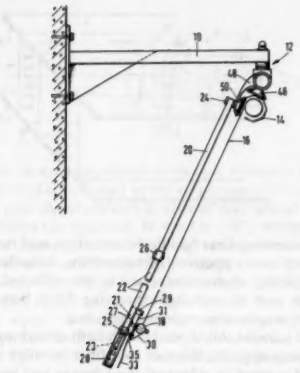


1. An optical memory apparatus comprising: a light source for providing a light beam; converting means for causing the light beam to take on a predetermined spot size; a light-focusing fiber guide arranged so that input and output light beams are parallel or anti-parallel and having a refractive index distribution decreasing radially outwardly from its center axis toward its surface arranged to propagate the light beam emitted from the converting means; and a memory medium positioned to be irradiated by a beam propagated through the fiber guide; wherein the length of the fiber guide is related to its characteristic propagation pitch and configuration such that possible deviation of the irradiating position of the light beam on the memory medium caused by a position deviation of the memory medium relative to the fiber guide is corrected by an equivalent displacement of the irradiating position relative to the fiber guide due to the light beam locus followed by the irradiating light.

3,942,868
CINE PROJECTION SCREEN

Hans Günther Hoffbauer, and Karl Kaufmann, both of Bad Lippspringe, Germany, assignors to Mechanische Weberie GmbH., Germany

Filed Apr. 23, 1974, Ser. No. 463,407
Claims priority, application Germany, Apr. 27, 1973, 2321428
Int. Cl.² G03B *21/56*
U.S. Cl. 350—117 **8 Claims**



1. A roll up cine projection screen, comprising:

a screen; roll up means onto and off which said screen is wound; said screen having a first end portion away from said roll up means; said roll up means being axially rotatable for the winding and unwinding of said screen; first brake means associated with said roll up means for braking its unwinding rotation, thereby to enable tensioning of the unwound said screen;

strut means connected at one end thereof to said in a manner such that said one end of said strut means does not shift along said screen with respect to said said strut means having screen connecting means at the other end thereof by which said strut means is connectable to said first end portion of said screen; said strut means being provided for supporting and stretching said screen;

a carrier; a first vertical axis pivot bearing; a second horizontal axis pivot bearing; said first bearing joining said carrier and said second bearing for permitting relative horizontal pivoting between said carrier and said second bearing around a first vertical axis; said second bearing joining said first bearing and said roll up means for permitting relative vertical pivoting between said first bearing and said roll up means around a second horizontal axis;

said second bearing comprises a horizontal bearing sleeve, a horizontal pin journalled in and rotatable with respect to said bearing sleeve; and said roll up means being secured to said horizontal pin; said first bearing comprising a vertically oriented pivot pin extending into and between said carrier and said second bearing sleeve;

a hub attached to said horizontal pin, said hub projecting out of said second bearing sleeve and toward said roll up means; cooperating engagement means on said roll up means and on said hub for connecting them together; said cooperating engagement means of said hub and said roll up means comprise a dovetail connection for enabling said hub to be slid lengthwise along said roll up means to a position generally centrally located along said roll up means;

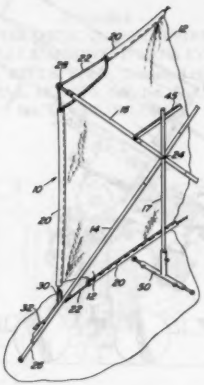
second and third friction brake means associated respectively with said first and said second bearings for enabling free adjustment of the aforesaid element joined by said bearings and for holding stationary any selected orientations of those aforesaid elements;

both said first and said second bearings and their respective said second and third brake means being uniformly unstepped to permit adoption of vertical and horizontal orientations of said screen without steps on the aforesaid bearings and brake means controlling these orientations.

3,942,869
PROJECTION SCREEN UNIT

Robert Portner, Blackwood, and Phillip Miller, Turnersville, both of N.J., assignors to Magna Mir, Inc., Philadelphia, Pa.

Filed July 12, 1974, Ser. No. 488,010
Int. Cl.² G03B *21/58*
U.S. Cl. 350—117 **12 Claims**



1. A projection screen unit comprising:

a pair of diagonally disposed cross rods;

a screen member having sleeve-like receiving means extending around its perimeter;

an inelastic member slidably securable within said receiving means;

means for securing said inelastic member to said cross rods; and

means for imparting tension to said inelastic member.

3,942,870
LIQUID CRYSTALLINE OPTICAL FILTER

Franklin D. Saeva, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 29, 1974, Ser. No. 465,048
Int. Cl.² G01F *1/13*
U.S. Cl. 350—150 **11 Claims**

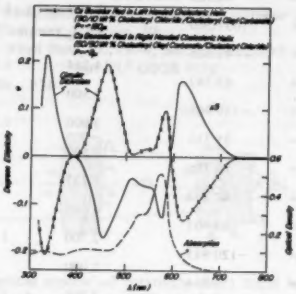
1. A method for producing circularly polarized light of desired wavelengths of incident radiation while not affecting all other wavelengths of the incident radiation comprising:

a. providing a light source;

b. providing an optical filter comprising at least one film of an optically negative liquid crystalline material having a reflection band with center wavelength λ_o and exhibiting reflective circularly dichroic behavior; said optically negative liquid crystalline film having dispersed therein an insoluble material; said insoluble material when dispersed in said optically negative liquid crystalline material becoming extrinsically optically active and having a light absorption band outside said reflection band within which circular dichroism is induced; and

c. directing a beam of radiation from said light source upon said optical filter thereby providing an emergent light beam containing a wavelength band of circularly polarized light corresponding to the absorption band of said

insoluble material; wherein said insoluble material is selected from the group consisting of non-polymeric aromatic compounds; azo compounds; nitro compounds;



nitroso compounds; anyl compounds; carbonyl compounds; thiocarbonyl compounds; alkenes; heterocyclic compounds; and mixtures thereof.

3,942,871

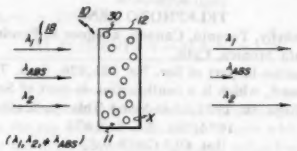
LIQUID CRYSTALLINE OPTICAL FILTER

Franklin D. Saeva, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 29, 1974, Ser. No. 465,052

Int. Cl.² G01F *1/13*

U.S. Cl. 350—150 **10 Claims**



1. A method for removing predetermined amounts of circularly polarized light at at least one wavelength, λ, from incident radiation comprising:

a. providing a circularly polarized light source;

b. providing an optical filter comprising at least one optically negative liquid crystalline material in contact with at least one insoluble material, said insoluble material becoming extrinsically optically active upon contact with said optically negative liquid crystalline material, and having a light absorption band defining a region of interest which includes said at least one wavelength λ; and

c. directing light from said light source upon said optical filter thereby removing from said incident radiation predetermined amounts of circularly polarized light of wavelength λ.

3,942,872

LIQUID CRYSTALLINE DISPLAY

Franklin D. Saeva, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

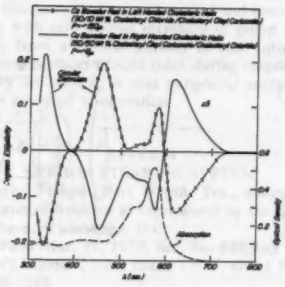
Filed Apr. 29, 1974, Ser. No. 465,047

Int. Cl.² G02F *1/13*

U.S. Cl. 350—160 LC **11 Claims**

8. A method for providing a display, comprising:

a. providing an imaging member comprising a layer of an optically negative liquid crystalline material shaped in image configuration between a pair of electrodes at least one of which is substantially transparent, said liquid crystalline material having dispersed therein at least one insoluble material; said insoluble material becoming extrinsically, optically active and, having a light absorption band within which circular dichroism is induced, by being in contact with said optically negative liquid crystalline material; said liquid crystalline material being at a temperature in the negative-positive transition range of said liquid crystalline material; and



b. while viewing said imaging member through a circular polarizer, applying an electrical field across said layer within the optically negative-positive transition electrical field strength range of said liquid crystalline material.

3,942,873

REFLECTING DIFFRACTION GRATING FOR MINIMIZING ANOMALIES

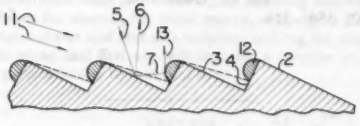
Tsumoru Shimotakahara, Katsuta, Japan, assignor to Hitachi, Ltd., Japan

Filed Dec. 9, 1974, Ser. No. 531,163

Claims priority, application Japan, Dec. 14, 1973, 48-138632

Int. Cl.² G02B *5/18*

U.S. Cl. 350—162 R **15 Claims**



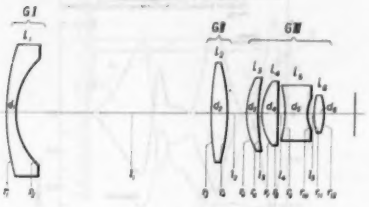
1. In a reflecting diffraction grating comprising a plurality of grooves for light diffraction, each of said grooves being formed by first and second reflecting surfaces, the improvement in that said second reflecting surface has a convex configuration for preventing light reflected from said first reflecting surface from interfering with light reflected from said second reflecting surface and for scattering thereat light reflected from said second reflecting surface, said convexly configured second reflecting surface having a surface roughness greater than said first reflecting surface thereby to reduce anomalies.

3,942,874

PANCRATIC WIDE-ANGLE OBJECTIVE

Walter Besenmatter; Trude Muszumanski, both of Vienna, and Gunter Kurz, Vosendorf, all of Austria, assignors to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria, part interest to each

Filed Feb. 14, 1974, Ser. No. 442,433
Claims priority, application Austria, Mar. 1, 1973, 1810/73
Int. Cl.² G02B 15/00
U.S. Cl. 350—184 8 Claims



Lens		Radius	Axial Distance Between Surfaces	N_d	V_d
	R_1 =	44.903			
L1			9.000	1.589	61.0
	R_2 =	1037.300			
			.250		
	R_3 =	41.385			
L2			14.284	1.516	64.0
	R_4 =	63.742			
			3.500		
	R_5 =	−149.9080			
L3			3.000	1.755	27.5
	R_6 =	31.213			
			19.599		
	R_7 =	80.786			
L4			5.777	1.750	35.0
	R_8 =	−47.302			
			4.543		
	R_9 =	−42.907			
L5			2.700	1.755	27.5
	R_{10}=	−120.985			
			1.000		
	R_{11}=	119.884			
L6			3.500	1.740	28.2
	R_{12}=	−71.346			
			2.436		
	R_{13}=	−61.984			
L7			1.600	1.785	25.6
	R_{14}=	166.988			
			40.5		

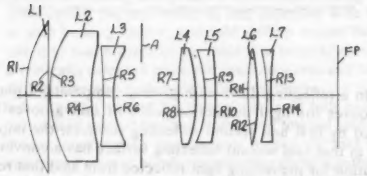
1. A pancratic wide-angle objective comprising:
a stationary negative front component;
a stationary multilens positive rear component; and
an axially movable positive intermediate component between said front and rear components;
said front component being a meniscus-shaped lens member with a concave surface turned toward said intermediate component and with an absolute focal length greater than that of said rear component;
said intermediate component being a biconvex lens member with a focal length greater than the absolute focal length of said front component, the absolute focal lengths of said front component, said intermediate component and said rear component having a ratio of approximately 4:5:3.

3,942,875

WIDE APERTURE LONG FOCAL LENGTH LENS

Ellis I. Betensky, Toronto, Canada, assignor to Ponder & Best, Inc., Santa Monica, Calif.

Continuation-in-part of Ser. No. 286,920, Sept. 7, 1972, abandoned, which is a continuation-in-part of Ser. No. 179,304, Sept. 10, 1971, abandoned. This application May 9, 1974, Ser. No. 468,472
Int. Cl.² G02B 9/64, 1/00
U.S. Cl. 350—214 5 Claims



1. A lens defined substantially by the following data as scaled for a 24 × 36mm image frame:

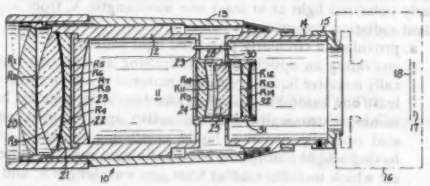
where N_d is the index of refraction, V_d is the Abbe number, L1-L7 are the lens elements from the object end to the image end, R1-R14 are the surface radii of the lens elements, the axial distances are measured axially between lens surfaces, and the last axial distance is the back focal length.

3,942,876

TELEPHOTO LENS

Ellis I. Betensky, Toronto, Canada, assignor to Ponder & Best, Inc., Santa Monica, Calif.

Continuation-in-part of Ser. No. 286,920, Sept. 7, 1972, abandoned, which is a continuation-in-part of Ser. No. 179,304, Sept. 10, 1971, abandoned. This application May 9, 1974, Ser. No. 468,473
Int. Cl.² G02B 9/62
U.S. Cl. 350—215 18 Claims

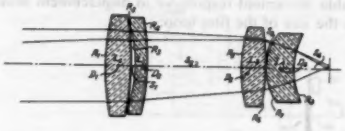


1. A photographic lens of substantially constant equivalent focal length adapted to be mounted to a camera which includes an image frame, said lens having an equivalent focal length when focused to infinity greater than its front vertex distance, a lens housing, a plurality of lens elements defining an objective coaxially mounted in said housing, means for moving said objective axially to focus said lens with said elements in fixed relation, a correcting lens for correcting off-axis imagery when said lens is close focused in said housing behind said objective in fixed relation to said housing, said correcting lens having negative power and having an equivalent focal length whose absolute value is no greater than three times the equivalent focal length of the overall lens.

3,942,877
SHORT FOCAL LENGTH PETZVAL-TYPE OPTICAL SYSTEM

Andor A. Fleischman, Northbrook, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Nov. 11, 1974, Ser. No. 522,797
Int. Cl.² G02B 9/34
U.S. Cl. 350—220 **1 Claim**



1. An optical system of relatively short focal length and large aperture having substantially the following specification:

EFL = 7.38mm
½ Angle of Field = 2.58°

LENS	RADII (IN.)	THICKNESS (IN.)	SPACING (IN.)
L_1	R_1 = .8013		
		D_1 = .0890	
	R_2 = 1.7049		
			S_1 = .0163
L_2	R_3 = −.4552		
		D_2 = .0400	
	R_4 = .8970		
			S_2 = .3381
L_3	R_5 = .5318		
		D_3 = .0852	
	R_6 = 1.4273		
			S_3 = .0050
L_4	R_7 = .1864		
		D_4 = .0861	
	R_8 = −.2589		
			S_4 = .1320 BFL

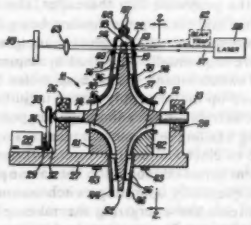
ALL ELEMENTS: V = 25.8, N_D = 1.785

wherein the first column lists the lens elements numerically starting at the ray entrance side of the system which elements each have the same dispersive index and refractive index; the second column lists the respective base radii R_1 to R_8; the third column lists the thickness D_1 to D_4 of the respective elements; and the fourth column lists the axial spacings S_1 to S_4 between the respective elements, and the image plane.

3,942,878
APPARATUS FOR MODULATING A HIGH ENERGY BEAM

Simon L. Engel, Mountain View, Calif., and Robert A. McFall, East Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 5, 1974, Ser. No. 494,753
Int. Cl.² G05D 25/00
U.S. Cl. 350—274 **12 Claims**



1. Apparatus for modulating a high energy electromagnetic beam such as a laser beam comprising:

a disk-shaped rotor positioned to intercept the beam at the periphery thereof,

means rotating said rotor about its central axis,

said rotor having at least one shaped opening at the periphery thereof positioned to allow passage of said beam therethrough as said opening moves into the path of said beam during rotation of said rotor,

a pair of annular shroud members each positioned adjacent a different one of the sides of said rotor to define annular spaces adjacent the opposite sides of said rotor, and

impeller blades carried on each side of said rotor and cooperating with said shroud members to pump cooling air radially from a central portion of said rotor over the peripheral surfaces of said rotor during rotation thereof, whereby air cooling of said peripheral surfaces of said rotor is provided in operation.

3,942,879
MIRROR STEERING SYSTEM

Richard Payne Pledger, Fort Worth, Tex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 19, 1975, Ser. No. 559,863
Int. Cl.² G05D 25/00; G02B 27/17; G01J 1/20
U.S. Cl. 350—285 **2 Claims**

1. A mechanical mirror steering system comprising: a gimbal; a plane mirror pivotally mounted within the gimbal, a means for steering said plane mirror affixed to one side of the plane mirror and extending normal to the plane thereof, a first bifurcated link connected to a first universal swivel joint at one end; an arm means connected to a pivot for rotation about a first axis, said arm means having a second universal swivel joint atone end; a second bifurcated link connected to said second joint on said arm means to universally swivel thereby, and a slider bearing connecting said first and second links at their bifurcated ends and receiving, in a sliding relationship, said means for steering the plane mirror, whereby as the mirror rotates about said first axis radiation striking the mirror at a point along said first axis will describe a circular arc on a plane perpendicular to said first axis.

3,942,880
LASER MIRROR

Glenn W. Zeiders, Jr., Watertown, Mass., assignor to Avco Corporation, Cincinnati, Ohio

Filed Sept. 27, 1968, Ser. No. 763,422
Int. Cl.² G02B 5/08; H01S 3/05
U.S. Cl. 350—310 **8 Claims**

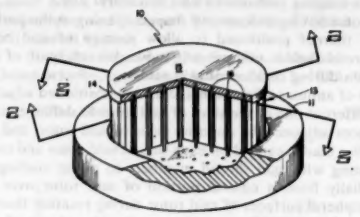
1. In a mirror for use in a laser, the combination comprising:

a. a face portion having an exposed optically reflective surface;

b. a rear portion spaced from said face portion, said rear portion being substantially inflexible as compared to said face portion;

c. rod means having a low coefficient of expansion fixedly connected to said face portion and rear portion for maintaining them in substantially fixed spaced relationship;

and



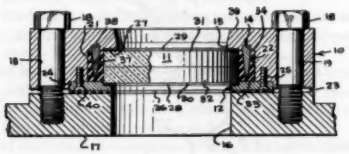
d. means for removing heat from said face portion including means for passing a coolant through said space between said face portion and said rear portion.

3,942,881

SIGHT GLASS ASSEMBLY

Charles E. Meginnis, 529 1/2 Nancy St., Charleston, W. Va. 25302

Filed Nov. 12, 1974, Ser. No. 523,277
Int. Cl.² G02B *5/00*
U.S. Cl. 350—319 **10 Claims**



1. A sight glass assembly comprising a housing structure mountable on a vessel containing a fluid, said housing structure having an opening therethrough, said opening having an enlarged section providing a shoulder, a face plate having an opening registered with the opening in said housing structure, mounted on said housing structure so that a portion thereof is disposed in opposed relation to said shoulder, a lens disposed in the enlarged section of the opening in said housing structure and interposed between said shoulder and said portion of said face plate, a packing member disposed in the enlarged section of said opening between said housing structure and a periphery of said lens, an outer end of said packing member having an annular recess extending toward said face plate, an annular wedging member disposed on said shoulder and projecting into the recess of said packing member, said wedging member having a cross-sectional area greater than the cross-sectional area of the recess of said packing member in an uncompressed condition, and means for securing said face plate to said housing structure, said securing means applying a force on said packing member causing said packing member to engage said wedging member and expand it laterally to provide a compressive force about the periphery of said lens and effect a seal between said housing structure and the periphery of said lens.

3,942,882

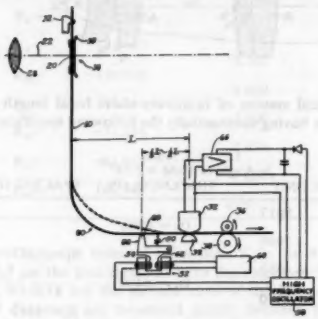
FILM TRANSPORT SPEED CONTROLLING DEVICE

Fumio Saito, Kawaguchi, Japan, assignor to Bell & Howell Japan, Ltd. and Nihon Beru-Haueru Kabushiki Kaisha, both of Tokyo, Japan

Filed July 15, 1974, Ser. No. 488,869
Claims priority, application Japan, July 30, 1973, 48-86058
Int. Cl.² G03B *21/48*
U.S. Cl. 352—14 **5 Claims**

1. In a motion picture camera having an exposure station and a sound station through which a sound film is passed for simultaneous recording of picture and sound on the sound film, a film transport mechanism for intermittently moving the film through the exposure station and a mechanism for constantly moving the film through the sound station, said mechanisms being driven by respective motor means, a loop being formed by the film intermediate said exposure and sound stations, improvements in a film speed control device for maintaining picture-sound recording synchronization of the camera, comprising:

film engaging means mounted adjacent the film loop for pivotable movement responsive to displacement according to the size of the film loop;



a power source; oscillator circuit means connected to said power source for generating high frequency oscillations; and

high frequency coil means connected to said oscillator circuit means and responsive to relative movement of said film engaging means by said film loop to control said mechanism for intermittently moving film as impedence through said coil means is changed by changes in the size of said film loop causing displacement of said film engaging means relative to said coil means,

wherein the size of said film loop is maintained substantially constant whereby picture-sound synchronization is maintained.

3,942,883

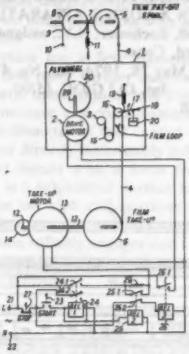
CINEMATOGRAPH FILM TRANSPORT MECHANISMS

Leroy Gordon Osborn, London, and George Hunnam Brownlee, Harrow, both of England, assignors to Westrex Company Limited, London, England

Filed June 21, 1974, Ser. No. 481,720
Claims priority, application United Kingdom, June 25, 1973, 30014/73
Int. Cl.² G03B *1/00*
U.S. Cl. 352—166 **5 Claims**

1. Cinematograph film mechanism for a cinematograph projector including a projector mechanism for transporting film through a projection gate and a film take-up mechanism for spooling the projected film thereafter, the said projector mechanism and said take-up mechanism being independently driven by projector and take-up electric motors, in which the two motors are sequentially energized by sequentially operating electrical switch means, the take-up motor being a torque motor, the take-up motor supply circuit including a gradually decreasing electrical power-limiting temperature-sensitive resistor having a falling resistance characteristic with temperature rise due to electrical energy current-flow therein and is electric current series-connected in the take-up motor supply circuit, the sequentially operating switch means comprising a first switch means for energizing the take-up motor before energization of the projector motor and by way of the power-limiting element, and second switch means for subsequently energizing the projector motor and for excluding from electrical circuit the take-up motor power-limiting resistor, and

where the sequentially operating switch means further comprises a manually operated START switch connected to actuate a first relay for closing the said first switch, to energize the said take-up motor, and connected to energize an electrical



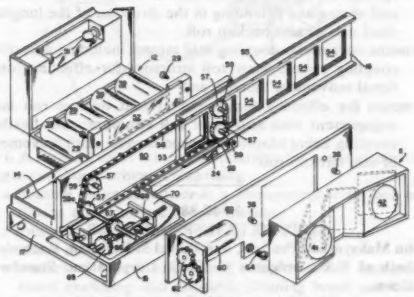
delay relay for delayed closing of the said second switch, to energize the said projector motor, and for delayed closing of a third switch for short-circuiting of the said temperature-sensitive series resistor.

3,942,884

INTERACTIVE AUDIO-VISUAL APPARATUS

Victor Richards, San Francisco; Jiri M. Nessel, Palo Alto, and Arno Parik, San Francisco, all of Calif., assignors to Victor Richards, San Francisco, Calif.

Filed Dec. 5, 1973, Ser. No. 421,987
Int. Cl.² G03B *21/04*
U.S. Cl. 353—9 **8 Claims**



1. Audio-visual apparatus comprising:

a. means for presenting each of a plurality of photo-images for viewing in either of two opposite sequences, including a light source and first mechanical means for bringing each of said photo-images into operative juxtaposition with said light source in sequential order;

b. means for producing the audio rendition of each of a plurality of sound recordings having a given time duration in excess of one second in either of two opposite sequences each correlated with a different one of said two opposite sequences for viewing said photo-images, comprising means for automatically correlating the beginning of the audio rendition of each one of said plurality of sound recordings with the beginning of the presentation of a different one of said plurality of photo-images for viewing including a transducer head for producing audio renditions of said plurality of sound recordings, said plurality of sound recordings being recorded in spaced relation on a single continuous substrate in sequential order corresponding to said sequential order of said photo-images to provide means for automatically terminating said audio rendition at the end of said given time duration of each of said plurality of sound recordings;

c. means for selecting one of said two opposite sequences for viewing said photo-images; and

d. means for controlling the length of time during which each photo-image is presented for viewing and the audio rendition of the sound recording correlated therewith is produced independently of said time duration of the one of said plurality of sound recordings correlated therewith;

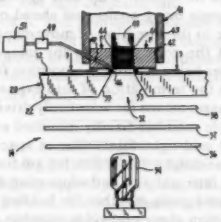
said means for automatically correlating the beginning of the audio rendition of each one of said plurality of sound recordings with the beginning of the presentation of a different one of said plurality of photo-images for viewing including second mechanical means controlled by said first mechanical means for bringing said transducer head into operative juxtaposition with the beginning of each of said plurality of sound recordings in said sequential order; said means for controlling the length of time during which each photo-image is presented for viewing including an automatic control means for stopping said first mechanical means when a photo-image is in operative juxtaposition with said light source and a manually operable control means for starting said first mechanical means when a photo-image is in operative juxtaposition with said light source, said manually operable control means being capable of overriding said automatic control means; and said means for producing said audio rendition of each of said plurality of sound recordings including means for providing relative movement of said transducer head with respect to each one of said plurality of sound recordings independently of said first and second mechanical means but responsive to said manually operable control means to interrupt said audio rendition of said sound recording when said manually operable control means is actuated, whereby said automatic correlation and said automatic termination is the same for either of said two opposite sequences for viewing said photo-images.

3,942,885

MICROFICHE READER

Bram Kool, Saratoga, Calif., assignor to Microform Data Systems, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 182,813, Sept. 22, 1971, abandoned. This application Sept. 9, 1974, Ser. No. 504,420
Int. Cl.² G03B *21/11, 21/14, 23/08*
U.S. Cl. 353—27 R **7 Claims**



1. A microfiche film reader comprising: a film support having a flat surface at one side thereof, a pair of opposed end margins, a slot through the support and extending between the end margins, and means at said end margins for retaining a microfiche film directly adjacent to and in engagement with said flat surface in a position with a portion of the film spanning the width of the slot; a light source on the opposite side of the support in alignment with the slot and positioned to

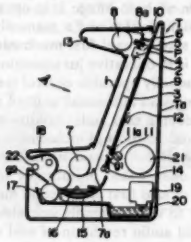
direct light therethrough and through the portion of the film spanning the slot when the film is retained directly on and in engagement with said flat surface; a lens; means mounting the lens adjacent to said one side of the support in optical alignment with the slot and the light source; a continuous spacer secured to the lens mounting means and engageable with the adjacent surface of the film when the latter is in said position, the spacer being concentric with respect to the optical axis of the lens and being movable into engagement with the film at locations adjacent to the sides of the slot for maintaining the film portion spanning the slot substantially taut for the focused projection and enlargement of the image of the film portion by the lens, said lens mounting means having structure for biasing the spacer toward the flat surface.

3,942,886

DISPLAY UNIT EQUIPPED WITH COPYING DEVICE

Atsuyuki Tanaka, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Azuchi, Japan

Filed July 22, 1974, Ser. No. 490,708
Claims priority, application Japan, Aug. 6, 1973, 48-88171
Int. Cl.² G03G *15/22*
U.S. Cl. 355—1 **7 Claims**



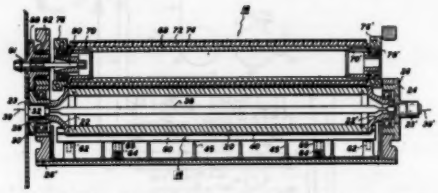
1. A display unit equipped with a copying device comprising: a double-sided display panel fixedly mounted at the front of the display unit; a light shield film movably supported behind said display panel in a position parallel with and at a fixed distance from said panel; winding members at the opposite ends of said display panel between which said light shield film extends and around which the ends of said light shield film are wound for selectively winding said light shield film along said display panel; a corona charger, an exposure member including a plurality of image transmitters constituted by a bundle of optical fiber lenses of graded refractive index, and a stop releasing member connected to each other for movement together and integrally connected in said light shield film for simultaneous movement with said light shield film with said corona charger being positioned ahead of said exposure member relative to the direction of movement thereof during the exposure of the copy paper to the image and said stop releasing member being located in a position for actuating the stop member at the termination of said exposure of the copy paper to said image; means for selectively driving said winding members; a guide member fixedly mounted on said unit at a position behind said light shield film in spaced and parallel relationship to said light shield film for guiding a photosensitive copy paper into said unit and supporting it therein; a stop member along said guide member for holding the copy paper in exposure position along said guide member, said stop member being movable for releasing said copy paper, and associated developing means for said copy paper adjacent said guide member for receiving the copy paper from said guide member after it has been released, whereby when a copy is to be made, copy paper is positioned on said guide member and said winding members are driven to move said corona charger, exposure member and stop releasing member parallel to said guide member between the guide member and the display panel for charging the copy paper, exposing it to the image from the rear of the display panel, and engaging the stop member for releasing the copy paper when it has been completely exposed.

3,942,887

DRIVE MECHANISM FOR A ROLL FUSER EMPLOYED IN A COPIER APPARATUS

Alan F. McCarroll, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 28, 1974, Ser. No. 473,848
Int. Cl.² G03G *15/00*
U.S. Cl. 355—3 R **12 Claims**



1. Roll fuser apparatus for fixing toner images to copy sheets comprising;

a heated fuser roll structure;

a backup roll adapted to form a nip with said fuser roll structure through which said copy sheets move with said toner images in contact with said heated fuser roll structure;

means including a flexible coupling for imparting rotational movement to said backup roll, said flexible coupling operatively connecting one end of said backup roll with said means and extending in the direction of the longitudinal axis of said backup roll;

means operatively coupling said means, including a flexible coupling to said fuser roll structure for effecting rotational movement thereof; and

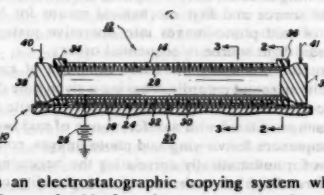
means for effecting movement of said backup roll into engagement with said fuser roll structure, said flexible coupling being adapted to accommodate such movement of said backup roll.

3,942,888

STEPPED TRANSFER ROLLER

John Maksymiak, Penfield, and Daniel S. Hoffman, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 6, 1975, Ser. No. 547,412
Int. Cl.² G03G *15/16*
U.S. Cl. 355—3 R **11 Claims**



1. In an electrostatographic copying system wherein an image is transferable from image support surface means to copy sheets of a predetermined range of thickness and a predetermined maximum lateral dimension, wherein a transfer

roller forms a transfer nip with said image support means for passage of said copy sheets through said nip against said image support means for said image transfer, and wherein pressure means are provided for pressing said transfer roller against said image support means with a preset total force, the improvement wherein:

said transfer roller has a substantially cylindrical and resiliently deformable integral exterior surface with a central portion and two integral end portions at each end of said central portion,

said central portion has a first diameter and extends in length along said roller further than said predetermined maximum lateral dimension of said copy sheets,

said end portions have a second diameter slightly greater than said first diameter of said central portion,

said end portions directly deformably rollably engage said image support means with a force from said pressure means which is a substantial portion of said total force, and said force on said end portions producing a first pressure, and

said central portion rollably engages said copy sheets in said nip with a second pressure which is substantially lower than said first pressure.

3,942,889

RESIDUAL TONER REMOVING APPARATUS

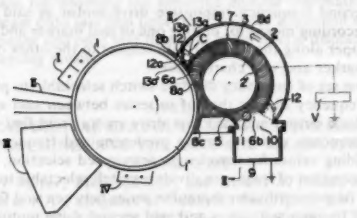
Takaji Kurita, Kawachinagano, and Takao Fujiwara, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 25, 1974, Ser. No. 445,337

Claims priority, application Japan, Mar. 5, 1973, 48-25816; Mar. 19, 1973, 48-33560[U]

Int. Cl. G03g *15/00*

U.S. Cl. 355—15 **14 Claims**



1. A residual toner removing apparatus for use in an electrostatic copying machine, comprising:

a housing mounted adjacent a photoreceptor surface and having an opening adjacent thereto;

a rotatable cleaning brush having brush hairs;

a casing plate;

a restriction board, said casing plate and said restriction board enclosing said rotatable cleaning brush and being enclosed by said housing, said casing plate and said photoreceptor surface forming an inlet gap, said casing plate contacting said brush hairs, said restriction board and said casing plate forming an outlet gap and compressing said brush hairs, said housing and said casing plate forming a chamber communicating with said inlet and outlet gaps;

charging means coupled to said casing plate for charging said casing plate with a polarity opposite to that of toner particles; and

scraper means slidably interposed between and contacting said housing and said casing plate for scraping off toner particles adhering to said casing,

whereby said cleaning brush, during rotation, causes an air flow through said inlet and outlet gaps and said chamber, said casing plate electrostatically collects toner particles, and said scraper means scrapes off toner particles adhering to said casing plate.

3,942,890

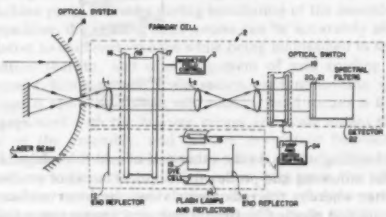
SECURE ACTIVE SENSOR

Warren L. Malone, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 21, 1974, Ser. No. 453,453

Int. Cl.² G01C *3/08*

U.S. Cl. 356—4 **3 Claims**



1. In an optical radar system having a transmitting portion for generating an optical radar beam, an optical system directing said beam to a target and collecting the reflected radiation, and a receiving portion having a detector for sensing the reflected radiation, the improvement in said system comprising:

a laser transmitter forming said transmitting portion and comprising, a first partially transmissive end reflector and a second substantially totally reflective end reflector positioned to form a laser cavity, a dye cell positioned in said cavity and aligned between said end reflectors, and means for stimulating said dye cell to laser emission to generate said optical radar beam;

a single Faraday cell comprising, two polarizers crossed by 90° and separated by a Faraday medium, said Faraday cell having a first portion extending into the laser cavity such that the laser beam must pass through the Faraday cell, and a second portion extending into an optical path between said optical system and said detector such that the reflected beam must pass through the Faraday cell before sensing by the detector;

means for establishing a magnetic field surrounding said Faraday cell and randomly varying the magnetic field strength so as to vary the optical frequency passed by said cell;

an optical switch and a plurality of spectral filters positioned in the optical path between said second portion of said Faraday cell and said detector; and

means coupled to said stimulating means and said optical switch for controlling said switch in conjunction with said laser transmitter to block optical radiation to said detector during lasing and pass optical radiation only during viewing of the reflected beam.

3,942,891

RADIOMETER PROBE

Seymour C. Spielberger, Roslyn Heights, N.Y., and Robert C. Savoca, New Canaan, Conn., assignors to Barnes Engineering Company, Stamford, Conn.

Filed Jan. 29, 1975, Ser. No. 544,988

Int. Cl.² G01J *5/48*

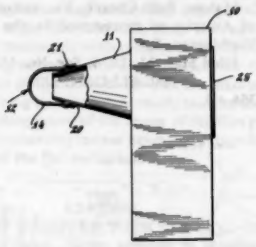
U.S. Cl. 356—43 **4 Claims**

1. A radiometer probe adapted to be removedly attached to the optical barrel of a radiometer, comprising

a. a probe having a thin plastic film of low thermal mass shaped to be easily deformed when brought into contact on one end thereof with a specimen whose temperature

is desired to be measured whereby the thin film rapidly assumes the temperature of the specimen with which contact is made,

b. the inner surface of said thin plastic film having a high emissivity, and



c. retaining means on the other end of said thin plastic film for mounting said probe on the optical barrel of a radiometer whereby the radiometer views the inner surface of said thin plastic film from which an accurate temperature measurement of a specimen in contact with said probe can be made by the radiometer.

3,942,892

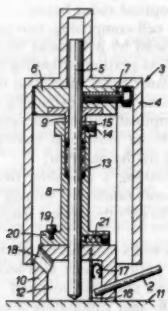
APPARATUS AND METHOD FOR THE SPECTROSCOPIC ANALYSIS OF SOLID METAL ARTICLES

Alan Douglas Ambrose, Corby, and Samuel Muir, Near Market Harborough, both of England, assignors to British Steel Corporation, London, England

Filed July 8, 1974, Ser. No. 486,554

Int. Cl.² G01J 3/30

U.S. Cl. 356—86 **11 Claims**



1. Apparatus for analysing the metal content of a solid metal article comprising a portable probe assembly adapted for application to the article to be analysed, a discharge electrode carried by the probe assembly, means for initiating and maintaining an electrical discharge between the electrode and the article, a remote radiation spectrometer, and a flexible radiation guide connecting the probe assembly to the radiation spectrometer and providing a flexible radiation path from the discharge to the spectrometer to enable spectroscopic analysis by the spectrometer of radiation emitted from the discharge, the portable probe assembly including a casing having a mouth for facing to the article to be tested, and a spacing member disposed at the mouth of the casing for contacting the article and locating the assembly in relation thereto, the assembly being so disposed and arranged that in operation thereof with the spacing member contacting the article, the electrode is at an optimum discharge spacing from the article.

3,942,893

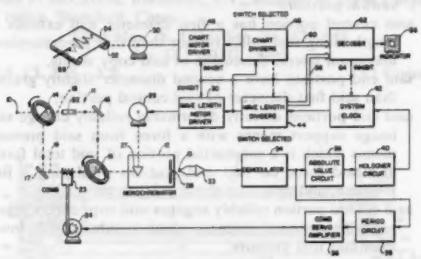
APPARATUS FOR MONITORING THE SELECTION OF CHART RECORDING AND WAVELENGTH SCANNING SPEEDS IN A RADIANT ENERGY ANALYZER

Allan S. Way, Irvine, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Nov. 11, 1974, Ser. No. 522,607

Int. Cl.² G01J 3/42

U.S. Cl. 356—96 **11 Claims**



1. In a radiant energy analyzer having a radiation source, a monochromator and a wavelength scanning mechanism therefor, and chart recording means for moving a marker in relation to chart paper along an abscissa scale and ordinate scale for recording a waveform spectrum of a sample, the combination comprising:

a system clock having an output of a predetermined frequency;

a first frequency responsive drive motor for driving said wavelength scanning mechanism for continuously varying the wavelength output of said monochromator at various wavelength scan speeds;

a second frequency responsive drive motor in said chart recording means for driving one of said marker and chart paper along the abscissa with respect to the other of said marker and said chart paper;

a first set of frequency dividers switch selectable to place a frequency divider thereof in series between said system clock output and said first drive motor, said first set of frequency dividers having predetermined frequency dividing values for wavelength scan speed selection;

a second set of frequency dividers switch selectable to place a frequency divider thereof in series between said first set of frequency dividers and said second drive motor, said second set of frequency dividers having predetermined frequency dividing values for abscissa scale expansion selection; and

decoding means coupled to said first and second sets of frequency dividers for providing an output in response to invalid combinations of selected dividers of said sets, said output inhibiting said first and second drive motors.

3,942,894

SELF REFERENCING RETRANSMITTING ALIGNMENT SENSOR FOR A COLLIMATED LIGHT BEAM

Dennis A. Maier, Albuquerque, N. Mex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 20, 1974, Ser. No. 525,594

Int. Cl.² G01B 11/26; G01C 1/00

U.S. Cl. 356—153 **3 Claims**

1. Apparatus for monitoring the alignment of a collimated light beam comprising

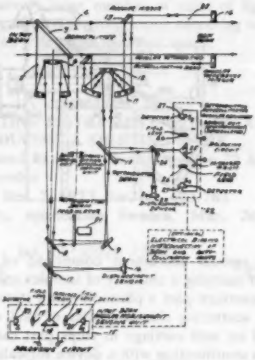
an auxiliary light beam transmission system,

means for diverting a sample portion of said collimated light beam through said auxiliary light beam transmission system,

said auxiliary light beam transmission system having optical elements arranged to convert said sample portion of

collimated light beam into an annular collimated beam and to transmit said annular collimated beam in proximate coaxial peripheral relationship with said collimated light beam,

an apertured reference mirror positioned to permit the passage of said collimated light beam through its aperture and to reflect said annular collimated light beam back through said auxiliary light beam transmission system,



a first light beam angular alignment sensing means,

a first light beam lateral displacement sensing means, and

means for diverting the reflected annular collimated light beam onto said first light beam angular alignment sensing means and onto said first light beam lateral displacement sensing means.

3,942,895

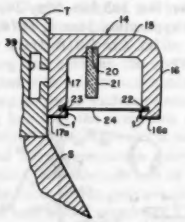
LINEAR DIGITAL READOUT ASSEMBLY FOR MILLING MACHINES AND THE LIKE AND MEANS FOR MOUNTING SAME

Robert Meyer, Mechanicville, and Robert S. Scher, Elnora, both of N.Y., assignors to Teledyne, Inc., Troy, N.Y.

Filed Sept. 4, 1973, Ser. No. 393,967

Int. Cl.² G01B 11/04

U.S. Cl. 356—169 **9 Claims**



1. A digital readout assembly for milling machines and the like to provide a digital display indicating relative movement between relatively movable parts of the machine, comprising:

a housing means, an elongate scale means fixedly carried by the housing means; adjustable mounting means connected with said housing means and secured to one of said machine parts rigidly securing the housing means and scale means to said one machine part in predetermined, adjusted, aligned relationship relative thereto; reading head means disposed in preassembled, prealigned, operative relationship to said housing means and scale means and free of engagement with said scale means; adjustable reading head mounting means secured to the reading head means and to another of said machine parts rigidly securing said reading head means to the other of said machine parts in predetermined, adjusted, aligned relationship relative thereto; removable pre-alignment spacer means on the housing means engageable by said reading head means to prealign the reading head means relative to the housing means and scale means; and digital display means connected to the reading head means to give a visual indication of relative movements between the scale means and reading head means and thus between the relatively movable machine parts, whereby during installation of the assembly on a machine, the reading head means can be accurately aligned relative to said scale means while being maintained in spaced relation thereto, and after alignment of said reading head means relative to said scale means, said removable spacer means is removed so that said reading head means is free of engagement with the housing means and scale means during use of the assembly, and relative movement between the reading head means and scale means is guided solely by the machine ways and is thus dependent only upon the relative movement between said relatively movable machine parts and relative movement between the machine parts is thus accurately measured and indicated.

3,942,896

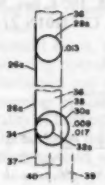
MEASURING MAGNIFIER WITH SPECIAL RETICLE

David Schneider, Lexington, and Lewis Soares, Burlington, both of Mass., assignors to Sweetheart Plastics, Inc., Wilmington, Mass.

Filed Nov. 6, 1974, Ser. No. 521,242

Int. Cl.² G01B 11/02

U.S. Cl. 356—171 **22 Claims**



8. A reticle for use in a measuring device for determining whether the width of bars or spaces are within prescribed limits comprising:

a transparent glass-like panel;

a plurality of spaced parallel reference lines on the panel; and

at least two circles tangent to and on the same side of each line with the circles tangent to the same reference line having diameters related to the prescribed limits of different bars or spaces to be measured.

3,942,897

METHOD AND APPARATUS FOR DETECTING SOLID SUBSTANCES CONTAINED IN LIQUID

Toshio Takahashi, Honjo; Ryosaku Tagaya, Isezaka, and Toshiyasu Ehara, Misato, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Division of Ser. No. 409,368, Oct. 25, 1973. This application Oct. 29, 1974, Ser. No. 518,940

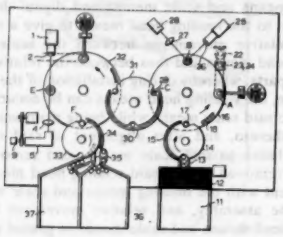
Claims priority, application Japan, Oct. 31, 1972, 47-108524; May 24, 1973, 48-59379

Int. Cl.² G01N 15/02

U.S. Cl. 356—197 **3 Claims**

1. A method for photometric determination of size and/or amount of solid matter that might be present as an impurity in a transparent liquid held in a sealed transparent vessel, com-

prising the steps of rapidly rotating the vessel around a vertical axis and then suddenly stopping the rotation to cause the solid matter to be suspended in the liquid; projecting light onto the vessel; and leading the scattered light reflected from the solid matter to a photometric device and measuring reflected light



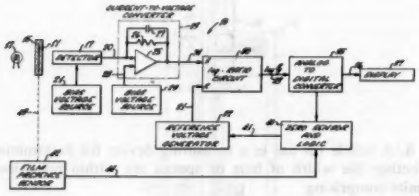
thereby; and leading the transmitted light through said vessel to a photometric scanning device provided with multiple optical elements, each having a minute light-receiving area, and successively measuring the light received by said multiple optical elements thereby.

3,942,898

DENSITOMETER FOR MEASURING THE DENSITY OF AN OPTICAL ELEMENT SUCH AS A FILM BADGE

Robert J. Anderson, Villa Park, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed July 25, 1974, Ser. No. 491,876
Int. Cl.[2] G01N *21/22*
U.S. Cl. 356—202 **9 Claims**



1. A densitometer for providing an output which is a function of the density of an optical element such as a film badge comprising:

a source of light;

means for holding said optical element in the path of said light, said optical element transmitting an amount of light which is inversely proportional to the density thereof;

detector means positioned to receive the light transmitted through said optical element for generating a first signal which is directly proportional to the intensity of the received light;

means for generating a reference signal;

circuit means responsive to said first signal and said reference signal for generating a second signal proportional to the log of the ratio of said reference signal to said first signal, said second signal being proportional to the density of said optical element;

means for displaying said second signal; and

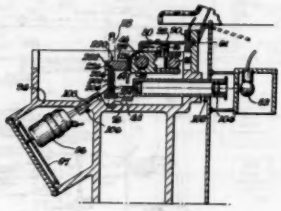
means operative when said optical element is removed from said light path for adjusting said reference signal until said second signal is zero.

3,942,899

CALIBRATING DEVICE FOR LIGHT SCATTER PHOTOMETERING INSTRUMENT

David K. Longhenry, East Lyme, Conn., assignor to Pfizer, Inc., New York, N.Y.

Continuation of Ser. No. 371,389, June 19, 1973, Pat. No. 3,901,588. This application Feb. 4, 1975, Ser. No. 547,012
Int. Cl.[2] G01J *1/40*; G01N *21/06*
U.S. Cl. 356—234 **5 Claims**



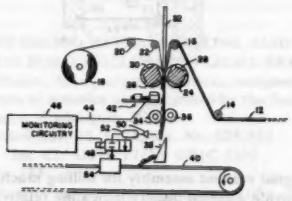
1. An optical instrument comprised of a carriage with means for carrying a plurality of samples and means for moving said carriage past a photometering station for measuring the light scattering characteristics of said series of samples traversed on said carriage in steps past said photometering station in combination with a device for calibrating said optical instrument, an elongated frame, a bracket attached to the frame readily detachably mounting said frame upon said carriage in a predetermined position, an elongated composite plate of transparent glass in said frame, said composite plate comprising a flat sandwich of nested wedge-shaped sheets of highly transparent and neutral density filter glasses, a surface of said composite plate having a uniform mat finish which scatters the light passing through it, and the density of the filter glass being sufficient to cover a predetermined range of light scatter corresponding to that caused by a predetermined range of said samples throughout the varying thickness of said filter glass over the length of said composite plate as said device is traversed in steps past the photometering station.

3,942,900

QUALITY CONTROL MONITOR FOR MEDICINAL CAPSULE PACKAGING APPARATUS

Charles R. Garris, Stratford, N.J., assignor to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 363,346, May 24, 1973, Pat. No. 3,882,316. This application June 6, 1974, Ser. No. 477,160
Int. Cl.[2] G01N *21/32*
U.S. Cl. 356—237 **3 Claims**



1. A quality control monitor for medicinal capsule packaging apparatus in which transparent capsules are filled with medication and fastened to a moving reflective backing strip in rows which are transverse to the direction of movement of the backing strip, comprising:

a plurality of light beam producing means, one for each capsule in a row,

a plurality of photosensitive detectors, one for each capsule in a row, and

means for mounting the light beam producing means and the photosensitive detectors for substantially simultaneous inspection of the capsules in a row, so that each beam approaches the backing strip at an oblique angle and is reflected to a different one of the detectors and so that each plane defined by the approaching and reflected part of a beam intersects the plane defined by the movement of a row of capsules to define a line which is oblique with respect to the direction of motion of the rows of capsules,

whereby a relatively large number of pairs of light beam producing means and photosensitive detecting means are accommodated in a small row-wise space.

3,942,901

OPTICAL SIGHTING INSTRUMENT WITH MEANS FOR PRODUCING A SIGHTING MARK

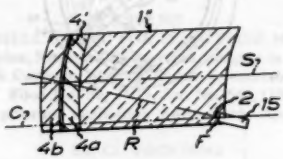
John Arne Ingemund Ekstrand, Drottninggatan 72 A, 252 21 Helsingborg, Sweden

Filed Dec. 7, 1973, Ser. No. 422,763

Claims priority, application Sweden, Mar. 26, 1973, 7304185

Int. Cl.² G02B 23/10

U.S. Cl. 356—251 **15 Claims**



1. A sighting instrument having front and rear ends and comprising a lens means mounted at said front end of the instrument and including a semi-transparent concave mirror surface facing said rear end of the instrument to be viewed therefrom and having its axis directed such that the focus of said concave mirror surface is offset from the sighting line of said instrument, and a light source having a light emitting surface positioned substantially at the focus of said concave mirror surface for directing light onto said concave mirror surface to produce a confined image of said light emitting surface, which is useful as a sighting mark and which to an observer who has his eye directed to said mirror surface in a distance rearwardly thereof, appears to lie in front of the mirror on the sighting line between the observer's eye and a target, said lens means with said concave mirror surface and said light source being arranged such in relation to each other and to said sighting line that the main axis of light emitted from said light emitting surface intersects said sighting line substantially on said semi-transparent mirror surface and intersects the theoretical optical main axis of said lens means in a point close to the focus of the concave side of the mirror surface, wherein said lens means comprises a front lens and a rear lens with said semi-transparent mirror surface arranged between said lenses, said rear lens being formed to eliminate spherical aberration from the reflecting semi-transparent mirror surface between said lenses and said front lens being formed such that the lens system will be zero-refracting, and wherein said light source placed substantially at the focus of said mirror comprises a light emitting diode adjustably movable in relation to said focus and a body of optical material extending from the front end of said diode and providing with its front end said light emitting surface of a configuration to produce said confined image useful as a sighting mark.

3,942,902

DEVICE FOR SPREADING MIXTURES OF PRIMARY COLORS IN FLUID FORM

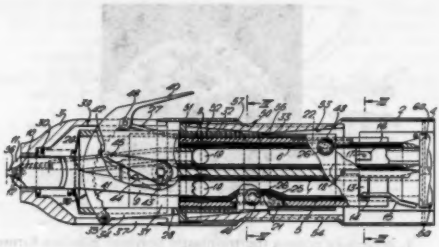
Vieno Reino Pajala, and Maija-Liisa Pajala, both of Toivolankatu 19A4, Turku, Finland

Filed Mar. 7, 1974, Ser. No. 448,923

Claims priority, application Finland, Mar. 8, 1973, 709/73

Int. Cl. A46b 11/00

U.S. Cl. 401—45 **35 Claims**



1. An apparatus for spreading colored fluids, comprising:

a. a frame;

b. a spreading element mounted with said frame for receiving and spreading fluids;

c. a plurality of fluid containers mounted with said frame for controllably supplying each of a plurality of fluids to said spreading element; and

d. a plurality of adjustment ducts, each being made of an elastic material and being operably connected between each of said fluid containers and said spreading element, for controlling the number of said plurality of fluids supplied from said plurality of fluid containers to said spreading element, whereby a single fluid or a desired number of fluids are supplied to said spreading element for spreading the fluid or plurality of fluids;

e. pressing means for selectively pressing against any of said adjustment ducts to force fluid from said adjustment ducts to said spreading element, said pressing means including:

a plurality of pressing wedges pivotally mounted with said frame, each of said wedges having a wedge-shaped surface in contact with one of said plurality of adjustment ducts;

guide sleeve means extending around said pressing wedges and being mounted for longitudinal movement with respect to said frame, said guide sleeve means having a plurality of holes formed therein adjacent said pressing wedges; and

pressing ball means mounted in said guide sleeve holes adjacent said wedges in contact with said fluid adjustment ducts for exerting a force on said fluid adjustment ducts through said pressing wedges contacting said pressing ball means in response to movement of said guide sleeve means; and

f. setting sleeve means mounted for rotational and longitudinal movement with respect to said pressing means and having conical surfaces for operably engaging said pressing means to control which of said adjustment ducts said pressing means presses against an irrelative proportion of the fluids forced from said adjustment ducts to said spreading element, whereby two or more of said fluids are controllably fed into a desired ratio to said spreading element.

3,942,903

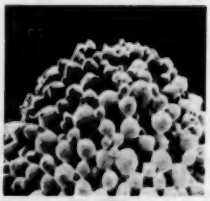
UNITARY POROUS THEMOPLASTIC WRITING NIB

Clarence A. Dickey, Atlanta, and John E. McDaniel, Fairburn, both of Ga., assignors to Glasrock Products, Inc., Atlanta, Ga.

Division of Ser. No. 336,179, Feb. 27, 1973, Pat. No. 3,896,196. This application Apr. 23, 1974, Ser. No. 463,308

Int. Cl.² B43K 5/00; C08J 9/00; B32B 5/18

U.S. Cl. 401—198 4 Claims



1. A unitary porous thermoplastic polymer product formed by:

dispersing thermoplastic polymer particles in a partial solvent for said thermoplastic polymer;

atomizing the dispersion at an elevated temperature sufficient to at least partially solubilize said thermoplastic polymer, to vaporize said partial solvent and to cause said particles to adhere and melt together thus forming fully-densified microspheres of the thermoplastic polymer; and

sintering said thermoplastic polymer microspheres to form the porous product.

3. A writing nib formed from the product of claim 2.

3,942,904

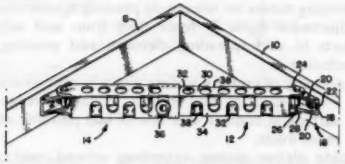
TELESCOPICALLY AND CIRCUMFERENTIALLY ADJUSTABLE BRACE

Max O. Morris, Issaquah, Wash., assignor to Kathet Corporation, Seattle, Wash.

Filed Apr. 19, 1974, Ser. No. 462,446

Int. Cl.² F16B 7/10; F16D 1/12

U.S. Cl. 403—108 11 Claims



1. A universal brace for use in bracing a wide variety of members, such as corner joints of furniture and the like, comprising:

an elongate, longitudinally extending, body member comprising two sections in which at least a portion of one of said sections is slidably telescopically contained within the other of said sections for adjustable extension and contraction of the overall length of said body member;

rows of transversely extending apertures formed through each of said sections for providing access passageways through each of said sections disposed at approximately 90° with respect to each other and being positioned for respective alignment of said apertures and passageways of any of said rows said one section with said apertures and passageways of said other section by adjusting the relative telescopic positions of said sections;

a body locking pin for removable insertion through any desired set of said aligned apertures and passageways for locking said sections of said body member in the desired adjusted length; and

means on the outer ends of each of said sections of said body member for contacting the members to be braced; whereby, said brace may be linearly adjusted lengthwise and said sections of said body member may be disengaged and one of said sections rotated and again engaged telescopically with the other of said sections for versatility in desired placement of said contacting means on the outer ends of said sections of said body member and versatility in use of said brace.

3,942,905

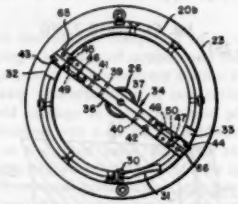
TREPANNING AND BORING TOOL

Geoffrey Gill, Grand Haven; Donald W. Pratt, Muskegon, and Bryant W. Green, Whitehall, all of Mich., assignors to Muskegon Tool Industries, Muskegon, Mich.

Filed Feb. 11, 1975, Ser. No. 549,075

Int. Cl.² B23B 41/02, 51/04

U.S. Cl. 408—204 7 Claims



1. A trepanning and boring tool including a tubular body portion having trepanning cutting means mounted at an end of said body portion and adapted to cut along a circular path incompassing the axially-projected cross-sectional area of the wall of said body portion, wherein the improvement comprises:

a boring attachment removeably secured to said body portion, and disposed to cut on a diameter in excess of the diameter established by said trepanning cutting means.

3,942,906

SIDE CHANNEL RING COMPRESSOR

Siegfried Schönwald, Bad Neustadt, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 13, 1975, Ser. No. 549,782

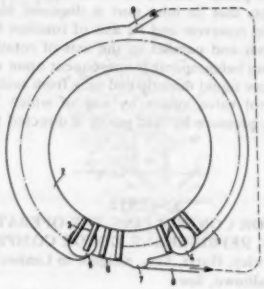
Claims priority, application Germany, Feb. 26, 1974, 2409184

Int. Cl.² F04D 5/00, 23/00

U.S. Cl. 415—53 T 2 Claims

1. In a side-channel ring compressor including compressor medium inlet and outlet openings communicative with the side channel of said compressor, and a channel break disposed between said inlet and outlet openings, the improvement comprising, said side channel break having at least one first outlet opening communicative therewith, and said side channel having a second inlet opening, disposed between said compressor medium inlet and outlet openings, which is communicative therewith at a point in said side channel wherein the pressure of said compressor medium is greater than the medium pressure at said side channel inlet opening and less than the medium pressure at said side channel outlet opening, and a fluid transmission line, coupled to said first and second openings, for exhausting compressor medium from said chan-

nel break through said first outlet opening and directing said exhausted medium into said side channel between said compressor medium inlet and outlet openings through said second inlet opening.



3,942,907

TWO-SHELL CASING FOR FLUID FLOW MACHINE

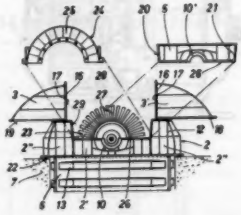
Pierre Meylan, Neuenhof, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Jan. 31, 1975, Ser. No. 546,119

Claims priority, application Switzerland, Apr. 2, 1974, 4570/74

Int. Cl.² F04D 29/40

U.S. Cl. 415—126 6 Claims



1. In a fluid flow machine of the turbine type such as a steam turbine, the combination comprising an inner shell surrounding the rotor component of the machine, said inner shell being divided along a horizontal plane passing through the rotor axis into upper and lower separable hemi-cylindrical parts and secured to a foundation, an outer shell surrounding said inner shell, said outer shell being comprised of a closed support frame secured to said foundation, an exhaust duct depending from said frame, each end of said support frame including a lower fixed part incorporating the lower half of the pass-through structure for the rotor shaft, and a removable upper part in the form of a yoke beam incorporating the upper half of the shaft pass-through structure, and an exhaust cover above said support frame, said exhaust cover being divided into two longitudinally extending separable halves joined to each other and to the adjacent surfaces of said support frame by means of fluid-tight connecting means.

3,942,908

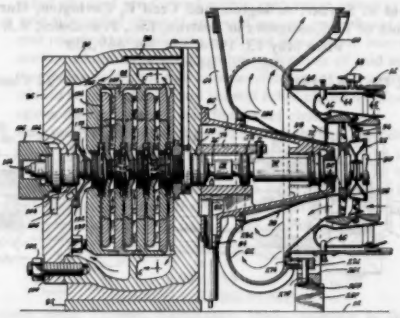
GAS TURBINE DRIVEN HIGH SPEED CENTRIFUGAL COMPRESSOR UNIT

Karol Pilarczyk, Loudonville, N.Y., assignor to Norwalk-Turbo, Inc., Latham, N.Y.

Division of Ser. No. 466,877, May 3, 1974. This application Apr. 25, 1975, Ser. No. 571,612

Int. Cl.² F04D 29/44

U.S. Cl. 415—199 A 1 Claim



1. A high speed centrifugal compressor comprising a vertically split casing having in-line inlet and discharge openings, a barrel assembly constituting at least one compressor stage removably positioned within the casing, the barrel assembly including, in at least one stage assembly, an impeller, a split annular guide vane assembly means positioned concentrically over the impeller to partially surround it, an annular diaphragm means positioned concentrically over the annular guide vane assembly means, the guide vane assembly means and diaphragm together defining, at least in part, one wall of a vaneless diffuser passageway communicating with the impeller output, the guide vane assembly means having integrally cast guide vanes therein, the diaphragm means having integrally cast return vanes therein, the return vanes and guide vanes forming passageways to conduct gas from a lower stage of compression to the next stage of compression, the guide vane assembly means and diaphragm means interfitting with one another and with the compressor casing in compression force fit relationship therewith without the need for fastening means.

3,942,909

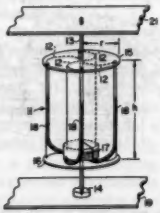
VERTICAL AXIS FLUID DRIVEN ROTOR

William C. Yengst, Solana Beach, Calif., assignor to Science Applications, Inc., La Jolla, Calif.

Filed July 22, 1974, Ser. No. 490,365

Int. Cl.² F03D 7/06

U.S. Cl. 416—132 B 2 Claims



1. A vertical axis rotor comprising curved vanes overlapping in their diameters and attached to a shaft, a pair of spaced-apart end plates adapted to hold and permit rotation of the

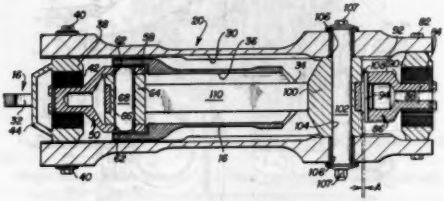
shaft to which said vanes are attached, and means for weighting an edge of said vanes comprising a plurality of tubes, each tube being positioned along the outer edge of each vane and connected to a source of liquid so that as the shaft and vanes rotate, fluid rises in said tubes.

3,942,910

GRIP-YOKE ASSEMBLY WITH A REDUNDANT CENTRIFUGAL LOAD SUPPORT

David E. Snyder, Arlington, and Cecil E. Covington, Hurst, both of Tex., assignors to Textron, Inc., Providence, R.I.

Filed May 13, 1974, Ser. No. 469,530
Int. Cl.² B64C *27/48*
U.S. Cl. 416—141 **22 Claims**



1. A redundant coupling for attaching a helicopter rotor blade to a mast mounted yoke where a grip encompasses said yoke and is rotatably attached thereto by a primary coupling to allow blade pitch change while opposing centrifugal forces from said blade, comprising:

a transverse member mounted on said grip;

a restraint member on said yoke; and

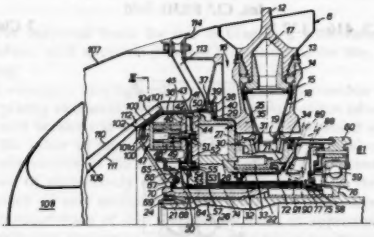
a thrust bearing normally free from stress supported between said restraint member and said transverse member and adapted to carry said centrifugal forces upon failure of said primary coupling to permit outward displacement of said grip to stress said thrust bearing thereby restraining said blade while maintaining pitch change capability of said blade.

3,942,911

BLADED ROTORS

John Gregory Keenan, Cheltenham; John Alfred Chilman, Stroud, and Ivor Harold Brooking, Gloucester, all of England, assignors to Dowty Rotol Limited, Gloucester, England

Filed Feb. 15, 1974, Ser. No. 443,146
Claims priority, application United Kingdom, Feb. 17, 1973, 7884/73; Feb. 17, 1973, 7885/73
Int. Cl.² B64C *11/38*
U.S. Cl. 416—157 A **12 Claims**



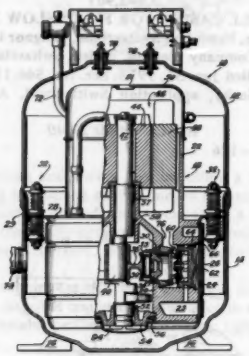
1. A bladed rotor including a hub and adjustable blades carried by the hub, said hub including, housed wholly therein in close proximity to each other and rotatable all as one therewith, (a) structure defining a liquid reservoir of annular form which, during rotation of the rotor, is independent of any liquid supply source external of said rotor, (b) a single liquid-pressure-operable vane-type actuator which is disposed with its axis of rotation coincident with the axis of rotation of the rotor, which is connected to said blades for effecting adjustment thereof to vary flow of fluid over the blades and which comprises two cooperable multi-vaned actuator components, (c) at least one pump which is so mounted upon one of said two components that its inlet port is disposed immediately adjacent to said reservoir and its axis of rotation is substantially offset from and parallel to the axis of rotation of the rotor, said pump being operable consequent upon rotation of the rotor to draw liquid directly and only from said reservoir, and, (d) control valve means by way of which liquid discharged under pressure by said pump is directed to operate said actuator.

3,942,912

METHOD FOR CONTROLLING THE OPERATION OF TWO-SPEED, REFRIGERANT MOTOR COMPRESSORS

Richard E. Cawley, Hurst, Tex., assignor to Lennox Industries Inc., Marshalltown, Iowa

Filed Oct. 4, 1974, Ser. No. 512,084
Int. Cl.² F04B *17/00*
U.S. Cl. 417—53 **3 Claims**



1. A method of controlling the operation of a two-speed electric motor that may be selectively operated at a predetermined high speed or at a predetermined low speed and that is used to drive a hermetic refrigerant compressor so as to attain an overall motor compressor efficiency at low speed operation which is equal to or greater than the overall motor compressor efficiency at high speed operation, the method comprising the steps of:

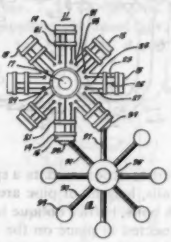
imposing a first torque load on the electrical motor at high speed operation and under a given set of evaporating and condensing conditions and imposing a second torque load on the electrical motor at low speed operation and under the same set of evaporating and condensing conditions so that the ratio of the second torque to the first torque is at least equal to the ratio of the efficiency of the electrical motor at low speed operation to the efficiency of electrical motor at high speed operation.

3,942,913

ROTATING CYLINDER WHEEL AND BALL-PISTON WHEEL MOTOR, GENERATOR, AND PUMP ASSEMBLY

Raymond Frank Bokelman, 9412 Royal Palm, Garden Grove, Calif. 92640

Filed Jan. 10, 1974, Ser. No. 432,421
Int. Cl.² F04B 1/12
U.S. Cl. 417—273 4 Claims



1. In a ball and rotary assembly having a cylinder wheel and a ball-piston wheel in rotary engagement and wherein each ball-piston is connected to the end of a spoke extending radially from a central hub, the improvement comprising:

a plurality of ball-pistons, each being slidably attached to the end of a spoke;

stop means to prevent each ball-piston from slidably disengaging the spoke to which it is slidably attached; and

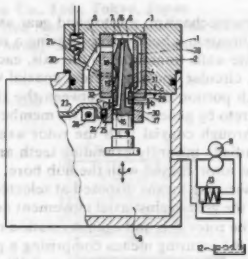
bias means to keep each ball-piston extended against said stop means and to absorb portions tending to move each ball radially toward the central hub.

3,942,914

FUEL INJECTION PUMP

Gerald Höfer, Flacht, and Karl Konrath, Ludwigsburg, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 8, 1974, Ser. No. 513,065
Claims priority, application Germany, Oct. 26, 1973, 2353737
Int. Cl.² F04B 23/00, 41/00, 7/04; F02M 39/00
U.S. Cl. 417—289 4 Claims



1. In a fuel injection pump associated with an internal combustion engine including a housing within which a suction chamber is defined, a cylindrical bushing mounted within said housing, a bore defined within said bushing, a pump piston mounted within the bore for axial and rotary motion therein, a pump work chamber defined by the housing, the bushing and the piston, outlet pressure lines connecting said chamber with associated injection nozzles, a first relief channel connected to the pump work chamber, a second relief channel connected to the pump work chamber, and an annular slide serving as a fuel quantity regulating member adapted for changing the fuel quantity delivered by the fuel injection pump as a function of engine rpm by opening the first relief channel so as to permit the first relief channel to connect the work chamber to the suction chamber the improvement wherein:

a. said second relief channel includes a first and second part;

b. said first part of said second relief channel leads to said work chamber;

c. said first relief channel and the second part of said second relief channel are formed within said pump piston;

d. said first relief channel and said second part of said second relief channel include apertures which open into said suction chamber, with the relative position of said aperture being such that said annular slide opens the aperture of said second part of said second relief channel before it opens the aperture of said first relief channel; and

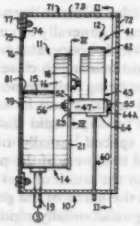
e. said second part of said second relief channel includes a further aperture which communicates with the first part of said second relief channel when the pump piston is at its bottom dead center and which is displaced from said communiction when the pump piston has executed a predetermined part of its fuel delivery stroke.

3,942,915

FLEXIBLE TUBE PUMP

Carlisle Alton Thomas, Kalamazoo, Mich., assignor to Dias, Incorporated, Kalamazoo, Mich.

Filed Aug. 5, 1974, Ser. No. 494,511
Int. Cl.² F04B 43/00, 43/12, 45/06
U.S. Cl. 417—360 13 Claims



1. A flexible tube pump, comprising in combination:

motor means having mounting means and a rotatable shaft;

a rotor carried by said shaft for rotation therewith and located adjacent said motor means;

impeller means distributed circumferentially on said rotor and responsive to rotation of said rotor for orbiting therewith;

a substantially U-shaped shield having leg means securable on said motor means through said mounting means and a semi-circular bight portion cantilevered from said leg means in substantially concentric relation with the orbit of said impeller means;

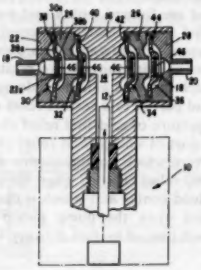
a compressible tube for carrying a fluid, said tube being engageable between said shield and said impeller means and having end portions extending along said leg means, said shield having a U-shaped peripheral wall substantially parallel to said shaft and opposed to said impeller means, the edge of said peripheral wall remote from said motor means being flanged inwardly to overlie said tube, and including a plate-like bearing member extending between said leg means substantially as a continuation of said flange and having a bearing surface engageable with a central portion of said rotor and backing same against the restoring force of the compressed tube;

whereby rotation of said rotor by said shaft causes said impeller means to move said fluid through said tube.

3,942,916
DOSING DEVICE PARTICULARLY FOR SMALL QUANTITIES OF LIQUID

Jan de Leeuw, Akersberga, Sweden, assignor to Autochem Instrument AB, Lidingo, Sweden

Filed Feb. 5, 1974, Ser. No. 440,090
Int. Cl.² F04B 21/02
U.S. Cl. 417—568 2 Claims



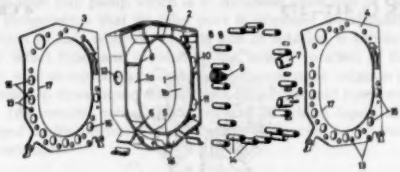
1. A dosing device particularly adapted for dispensing small quantities of liquid, said device comprising a housing including a chamber, a variable displacement device for varying the pressure within said chamber, an inlet duct communicating with said chamber and an outlet duct communicating with said chamber, an inlet valve located within said inlet duct for controlling opening and closing of said inlet duct and an outlet valve located within said outlet duct for controlling opening and closing of said outlet duct, at least one of said valves comprising a disc having a generally circular outer periphery, and a central portion which cooperates with a corresponding valve seat formed in said housing to close off the duct associated therewith, said disc being radially moveable in an annular groove formed in said housing and in which the peripheral portion of the disc is received, said disc including at least passage therethrough spaced radially outwardly from said central portion and the thickness of the peripheral portion of said disc being less than the width of said annular groove in a direction transverse in the plane of the disc, said central portion of said disc being substantially rigid and the portion of said disc located outside of said central portion being flexible, said housing defining a cavity in which said at least one disc is located, said annular groove lying at the outer periphery of the cavity, and said valve seat extending into said cavity by an amount relative to the position of said groove to provide flexing of said disc when said disc is in the closed position thereof.

3,942,917
HOUSING FOR CIRCULAR PISTON COMBUSTION ENGINE OF TROCHOID TYPE AND METHOD OF PRODUCING THE SAME

Werner Wieland, Obereisesheim, Germany, assignor to Audi NSU Auto Union Aktiengesellschaft, Neckarsulm and Wankel GmbH, Lindau, Germany

Filed Dec. 21, 1973, Ser. No. 427,417
Claims priority, application Germany, Dec. 21, 1972, 2262620; June 30, 1973, 2333364
Int. Cl.² F01C 21/10, 21/06
U.S. Cl. 418—60 12 Claims

1. A housing for circular piston combustion engines of trochoid type, comprising at least one annular shell having an inner peripheral wall in the shape of a multi-arcuate trochoid, an outer peripheral wall and end walls parallel to each other, and end pieces parallel to each other adjoined to the shell at the ends, such pieces each have end walls parallel to each other and an inner and an outer peripheral wall, at least the walls of the shell are comprised of formed sheet steel parts free of machining, said parts provided with openings for through bolts and for passage of coolant, said parts being connected together at their point of contact, stamped sheet spacers being arranged between the inner and outer peripheral walls as well as nipples serving as inlet and outlet passages

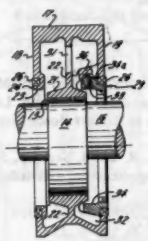


and at least one insert to accommodate a sparkplug well, and between the end walls, lengths of pipe are connected to accommodate through bolts, baffles oblique to the inner peripheral wall being connected in place on the interior surface of the outer peripheral wall between spacers for coolant.

3,942,918
ROTOR AND GEAR ASSEMBLY FOR ROTARY MECHANISMS

Walter L. Hermes, Cedar Grove, N.J., assignor to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Nov. 21, 1974, Ser. No. 525,725
Int. Cl.² F01C 1/02; F16H 57/00
U.S. Cl. 418—61 A 9 Claims



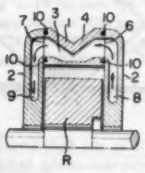
1. In a rotary mechanism, a rotor and gear assembly comprising in combination a hollow rotor having a rotational axis and parallel side walls transverse to the axis, each of the side walls having a circular opening therein coaxial with the axis, an internal hub portion disposed between the side walls and connected thereto by generally radial rib members and having a bore therethrough coaxial with the rotor axis, an internal gear having radially inwardly extending teeth and secured at one side of the rotor coaxial with the hub bore, a plurality of at least three securing means disposed at selected radial locations securing the gear against axial movement and movement transverse to the rotor axis and against rotation relative to the rotor, each of the securing means comprising a portion of the internal gear extending in the axially inward direction into the rotor interior and in contact with a mating rib member, the inwardly extending gear portion having a bore therein on an axis generally radial to the rotor axis and at an angle of about 60° to about 90° to the longitude of the rotor axis, the mating rib member having a mating bore therein coaxial with the bore in the inwardly extending gear portion, a resilient tubular pin disposed partially in the rib bore and partially in the bore in the inwardly extending gear portion, said rib members extending from the hub portion to the region of the opening in the side wall on the gear side and having their inner radial surfaces lying in a conical plane extending axially inwardly from the side wall opening, and the inwardly extending gear portions

having their outer radial surfaces lying in a like conical plane to thereby seat against the rib members.

3,942,919
ROTARY PISTON TYPE ENGINE

Yasuto Terazawa, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Japan

Filed Nov. 7, 1973, Ser. No. 413,516
Claims priority, application Japan, Nov. 8, 1972, 47-128729
Int. Cl.² F01C *21/06*
U.S. Cl. 418—83 **2 Claims**



1. Means for cooling a rotary piston type internal combustion engine having a casing with a pair of side housings comprising:

a central housing having inner and outer walls defining a plurality of cooling fluid passages, each cooling fluid passage extending axially through said central housing and having inlet and outlet portions in fluid communication with fluid passages in the side housings and an intermediate portion between said inlet and outlet portions of each of said cooling fluid passages,

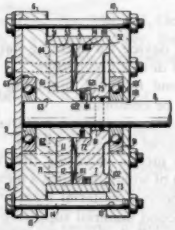
said inner wall having a thickness at said intermediate portion which is less than the thickness of said inner wall at said inlet and outlet portions,

said outer wall being inclined inwardly of said central housing from said passage inlet and outlet portions to reduce the cross-sectional area of said fluid passage adjacent said intermediate portion from the cross-sectional areas adjacent said inlet and outlet portions.

3,942,920
ROTARY FLUID PUMPS

Hiroshi Sakamaki, Utsunomiya, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Nov. 29, 1974, Ser. No. 528,314
Claims priority, application Japan, Nov. 28, 1973, 48-132568
Int. Cl.² F04C *15/00*
U.S. Cl. 418—230 **2 Claims**



1. A rotary fluid pump comprising:

a first annular plate forming a rear side, side-housing,

a second annular plate forming a front side, side-housing,

said rear side, side-housing having an inner wall surface facing said second annular plate provided with an axial projecting portion at the center thereof,

a radially intermediate inner wall surface portion which undulates circumferentially in the form of a general sine curve, and

an annular recess radially outwards thereof forming a first shoulder,

said second annular plate being provided with an axial recess on the face thereof facing said first annular plate and forming a second shoulder,

a cylindrical center housing extending between said annular plates and having portions received within said first and second shoulders,

a plurality of bolts extending between said plates, radially outwards of said cylindrical center housing and fixing said first and second plates to said cylindrical center housing,

axial bores formed within said first and second annular plates,

portions of said first and second annular plates being counterbored,

anti-friction bearings mounted within said counterbores, and

a shaft extending through said bores and mounted by way of said bearings,

said central axial projecting portion of said first annular plate extending axially beyond the circumferentially undulating inner wall surface portion of said first annular plate and terminating short of the inner wall surface of said second annular plate,

an annular rotor having a bore receiving the portion of said shaft intermediate of the end of said first annular plate axial projecting portion and the inner wall of said second annular plate and being of an axial length in excess thereto and being counterbored,

said counterbore receiving the central axial projecting portion of said second annular plate and being rotatable thereon,

said rotor further being provided with a plurality of circumferentially spaced radial grooves opening axially towards said sine curve, inner wall surface,

plate-like seal members slidably positioned within said grooves with their edges spring biased into contact with said sine curve inner wall surface, and

at least one inlet and exhaust port formed within said rear side, side-housing at circumferentially positions;

whereby, operating chambers formed by the rotor, said first and second annular plates and said center housing and said plate-like seal members sequentially increase and decrease in volume during rotation of the rotor and pumping forces exerted through said rotor on said shaft and said bearing within said annular plate are equally distributed on said shaft and said bearings within said first and second annular plates.

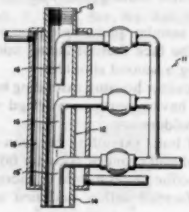
3,942,921
DIE AND AIR NOZZLE

Alexander Balaz, Barrington, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed June 12, 1974, Ser. No. 478,756
Int. Cl.² A29N *17/00*; B29D *27/00*; B29F *3/08*
U.S. Cl. 425—4 C **5 Claims**

1. An extruder die having an upper portion and a lower portion and useful for shaping and expanding a hot food mixture comprising an outer heating means engaged about an inner housing having an inlet in the upper portion of said housing and an outlet in the lower portion of said housing; said inlet and outlet being interconnected by a continuous longitudinal bore within said housing; and gas injection means protruding through said housing into said bore near the center

thereof said injection means comprising longitudinally-spaced, coaxial nozzles whereupon more than one gas stream



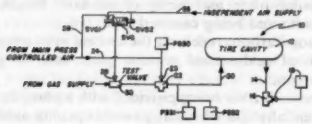
may be injected into said bore in a downwardly direction progressively one stream after the other.

3,942,922

TIRE PRESS AND MOLD LEAKAGE CONTROL

Clarence R. Cole, Medina, and Robert L. Duncan, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 1, 1974, Ser. No. 457,029
Int. Cl.² B29H *5/02*
U.S. Cl. 425—30 **6 Claims**



1. In apparatus for curing a tire having a cavity in a curing mold for a predetermined time and including first valve means for controlling admission of fluid medium at a first pressure to said cavity, the improvement comprising in combination second valve means for controlling said fluid medium between said first valve means and a supply of said gas, presettable timing means operable to effect closure of said second valve means for a preset time during and less than said predetermined time, fluid pressure responsive means operable to sense a second pressure less than said first pressure in said cavity, circuit relay means connected to said timing means and to said pressure responsive means and operable to generate a first signal responsive to an occurrence of said second pressure during said preset time, and a second timing means connected to said circuit relay means and energized in response to said first signal to extend said predetermined time.

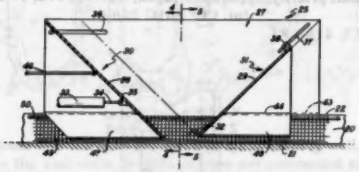
3,942,923

SLIPFORM WITH ADJUSTABLE HOPPER AND TROWEL MEANS

Travis W. Binion, 230 W. Main St., Camden, Tenn. 38320

Filed Apr. 15, 1974, Ser. No. 461,146
Int. Cl.² B28B *13/02*
U.S. Cl. 425—64 **5 Claims**

1. An apparatus for forming structural channel members from moldable material comprising a substantially flat base member, a pair of spaced parallel side rails fixed to the base member and projecting thereabove and forming therewith a trough-like static mold, skids movably engaging the tops of the side rails and adapted to move longitudinally thereon, a hopper secured to the skids and having a lower outlet for moldable material extending between said side rails and adapted to deposit moldable material in said trough-like static mold as said skids and hopper move lengthwise thereof, a forward template on the apparatus including a plate member forming a forward wall of the hopper and an integral sub unit depending from the plate member and projecting between said side rails in closely spaced relation thereto and to said base member and being of approximately rectangular cross sectional shape, said sub unit adapted to maintain the shape of a channel-like reinforcing mesh disposed in the trough-like static mold, means forming a fore and aft guide for the foward template on said hopper, means connected with the forward



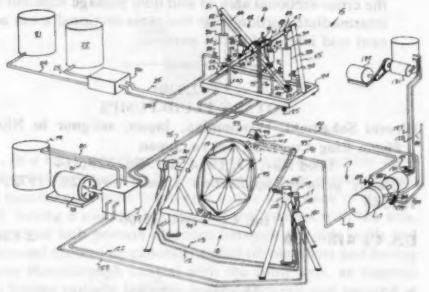
template to adjust it in the fore and aft directions on the hopper for varying the size of the hopper outlet, and a rear template on the apparatus including a plate member forming the rear wall of the hopper and an integral sub unit depending from the last-named plate member and projecting between said side rails to continuously shape moldable material deposited in said mold from the lower outlet of the hopper as the apparatus travels along said side rails.

3,942,924

FORMING DEVICE WITH FIRST AND SECOND MATERIAL PROPORTIONING MEANS

Paul H. Schwartz, Boulder, Colo., assignor to Dura Products, Inc., Boulder, Colo.

Filed Oct. 18, 1973, Ser. No. 407,664
Int. Cl.² B29C *5/04*
U.S. Cl. 425—110 **9 Claims**



1. A forming device for forming parts of relatively large dimensions, said device comprising:

first and second material supplying means for supplying material to be combined;

mixing means for combining material from said first and second material supplying means;

proportioning means including first and second metering means each of which includes a metering piston and each of which receives material from a different one of said first and second material supplying means;

actuating means including a fixed bar and a movable bar mounted for pivoting relative to said fixed bar, said metering pistons being connected between said bars so as to be actuated by pivotal movement therebetween, and said actuating means also including power piston means independent of said metering pistons and being connected between said bars for causing said pivotal movement therebetween; and

casting means for receiving material from said mixing means and causing said received material to assume a retainable predetermined shape.

3,942,925
APPARATUS FOR CONTINUOUS PRODUCTION OF ELONGATED FOAM PLASTICS BLOCKS

Willi Schmitzer, Birlinghoven; Reiner Raffel, St. Augustin; Ferdinand Althausen, Neunkirchen Seelscheid, and Ferdinand Proksa, Bergisch Neukirchen, all of Germany, assignors to Maschinenfabrik Hennecke GmbH, Leverkusen, Germany

Filed May 1, 1972, Ser. No. 248,912
Claims priority, application Germany, May 11, 1971, 2123216; Dec. 31, 1971, 2165903; Dec. 31, 1971, 2165902
Int. Cl.² B29D *27/04*
U.S. Cl. 425—115 **16 Claims**

1. Apparatus for the production of continuous foam plastic blocks by free foaming, comprising:

a. a conveyor belt assembly comprising an endless revolving conveyor belt and lateral boundary members over the upper run of the belt for limiting lateral movement of the foaming plastic,

b. means for continuously supplying cover foil to the upper run of the belt and the lateral boundary members for separating the foaming plastic from the conveyor belt and lateral boundary members,

c. means for supplying a mixture foamable to form the foam plastic, to the rear end portion of the upper run after the cover foil of (b) is applied,

d. means for laying a web or foil onto the mixture forward and adjacent said mixture supply means (c) for bearing and floating on, and traveling with the mixture during the foaming thereof,

e. a leveling device comprising a slatted grating disposed adjacent the supply means for overlying the web or foil and resting on the foaming plastic, for surface levelling of the rising profile of the foam transversely of the conveying direction, the leveling device being adapted to be supported by the raising foam.

3,942,926
APPARATUS FOR FABRICATING FOAM PADS

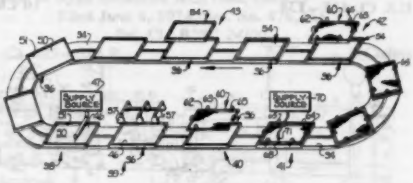
Carl Gordon Bulloch, Jr., 31 Kingwood Place, Asheville, N.C. 28804

Continuation-in-part of Ser. No. 298,953, Oct. 19, 1972, Pat. No. 3,818,560, which is a division of Ser. No. 130,328, April 1, 1971, Pat. No. 3,719,963. This application June 12, 1974, Ser. No. 478,617
Int. Cl.² B29D *27/04*
U.S. Cl. 425—126 R **22 Claims**

1. An apparatus for fabricating a foam pad suitable for use in a seat, mattress, or the like and comprising

an open top mold comprising a generally flat bottom wall and a raised peripheral edge wall surrounding said bottom wall and defining a predetermined peripheral outline, said mold being adapted to receive a foamable elastomeric material therein to form a resilient cellular pad having a dense crust on the upper surface thereof which is in contact with the surrounding air, and

a mold insert adapted to be positioned on the upper surface of the foaming material in said open top mold for leveling the underlying foaming material and while permitting air to contact a substantial portion of the surface of the foaming material to permit the formation of a dense crust, said insert comprising a generally flat openwork member defining a peripheral border having somewhat smaller dimensions than said peripheral outline of said open top

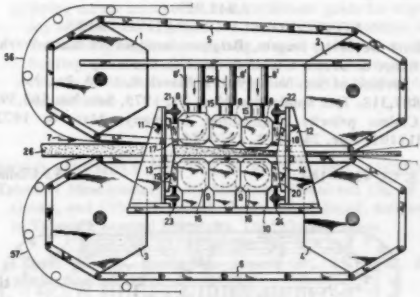


mold such that the mold insert may be floatingly positioned on the foaming material within said mold without supportingly resting upon said peripheral edge wall of said mold.

3,942,927
PRESSES FOR THE PRODUCTION OF BOARDS SUCH AS CHIPBOARD, FIBERBOARD AND THE LIKE

Albert De Mets, Kachtem, Izegem, Belgium, assignor to Bisonwerke Bahre & Greten GmbH & Co. KG, Germany

Filed Apr. 24, 1973, Ser. No. 354,077
Claims priority, application Germany, Apr. 26, 1972, 2220553; Mar. 30, 1973, 2316068
Int. Cl.² B29C *15/00*
U.S. Cl. 425—135 **24 Claims**



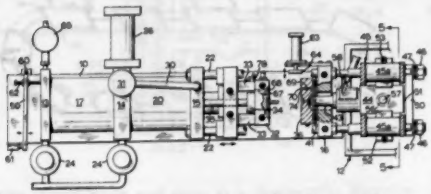
1. A continuously operating press for the production of panels, such as chipboards, fiberboards, and the like, including cooperating endless plate belts comprising mutually linked-together plates, said cooperating endless plate belts rotating about axes arranged substantially horizontally and substantially in parallel with each other so that said endless plate belts are in facing relationship and movable in the same direction over a material pressing portion of the travel paths of said plate belts, drivable presure rollers for driving said endless plate belts, said drivable pressure rollers arranged in at least one superposed pair, endless bands surrounding and movable with each endless plate belt, and adjusting means for moving one axial end of each pressure roll of at least one superposed pair of pressure rollers in a substantially horizontal plane so that the projection of the axis of the pressure roller being moved on the material pressing portion of the path of travel of at least one of said belts defines an oblique angle with respect to said direction.

3,942,928

PRESSURE MOULDING MACHINES AND MOULD PARTS THEREFOR

Norbert R. Keiz, 45-Knoll St., Port Colborne, Ontario, Canada

Filed Aug. 21, 1973, Ser. No. 390,270
Int. Cl.² B29F 1/00
U.S. Cl. 425—138 10 Claims



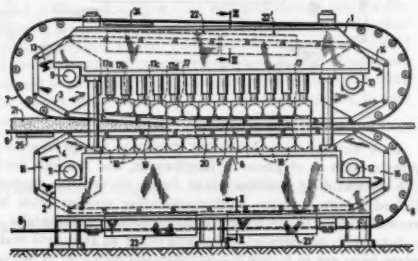
6. In combination with a pressure moulding machine comprising a machine frame, means for mounting two mould parts by the frame for movement relative to one another for opening and closing the mould cavity formed by the two mould parts, motor means operatively connected to one mould part to move it relative to the other part and to hold the parts with their respective mating faces in mating engagement with one another under pressure during a mould filling operation, means for supplying air pressure higher than ambient to one of the mould parts and for detecting escape of air from between the mould part mating faces caused by lack of mating engagement of the said faces; the combination comprising one of the mould parts having a bore therein for receiving the said air, the bore extending to a part of the said mating face of the mould part such that its opening to the respective mating face is spaced from the mould cavity.

3,942,929

CONTINUOUSLY OPERATING PRESS

Albert De Mets, Izegem, Belgium, assignor to Bison-Werke Bahre & Greten GmbH & Co. KG, Germany

Division of Ser. No. 339,039, March 8, 1973, Pat. No. 3,887,318. This application Mar. 31, 1975, Ser. No. 563,398
Claims priority, application Germany, Mar. 8, 1972, 2211191; Apr. 24, 1972, 2220074
Int. Cl.² B29C 3/06, 15/00
U.S. Cl. 425—143 13 Claims



1. A press for producing boards such as chipboards, fibreboards, and the like; said press comprising:

a first movable endless belt formed of heatable belt parts,

a second movable endless belt formed of heatable belt parts,

guiding and moving means for guiding and moving said first and second belts with respective outer surfaces of said belts in facing relationship and moving in the same direction over a material pressing portion of the respective travel paths of said belts such that material forming said boards can be conveyed by and compressed between said belts along said material pressing portion of said respective travel paths,

heating means for heating at least one of said first and second belts, said heating means including at least one flame burner directing a heating flame against a portion of at least one of said belts and burner exhaust gas conducting means for directing exhaust gases from said at least one flame burner against portions of at least one of said belts which are spaced from said portion being directly heated by said heating flame, and

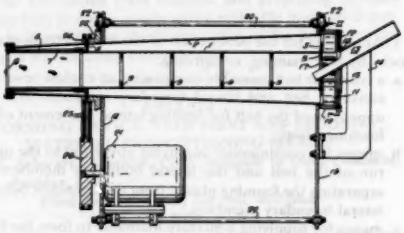
temperature control means for controlling said burners as a function of the temperature of the associated belt.

3,942,930

APPARATUS FOR PRODUCING GRANULES FROM POWDER

Eric Whitehead, Newbury, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Feb. 19, 1975, Ser. No. 551,114
Claims priority, application United Kingdom, Mar. 5, 1974, 9811/74
Int. Cl.² B29B 1/02
U.S. Cl. 425—222 3 Claims



1. Apparatus for producing granules from powder, the apparatus comprising inner and outer cylinders mounted for rotation about an at least approximately horizontal axis and means for introducing powder into one end of said inner cylinder to produce granules by coagulation of said powder as said inner cylinder rotates, said inner cylinder having an outlet at its other end for granules to pass out thereof and including towards said other end a perforated wall portion for allowing uncoagulated powder but not granules to fall therethrough, and said outer cylinder having a diameter which decreases from said one end to said other end of said inner cylinder whereby powder may fall through said perforated wall portion into said outer cylinder and travel back over the inner surface thereof to its large-diameter end as it rotates, and means operable by the rotation of said outer cylinder for feeding powder which reaches said large-diameter end back into said one end of the inner cylinder.

3,942,931

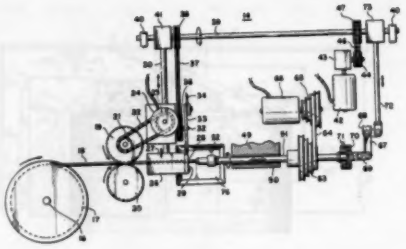
METHOD AND APPARATUS FOR PRODUCING SEALING WASHERS

William Gould, and Charna Gould, both of 93 Sagamore Road, Millburn, Essex Co.,, N.J. 07041

Filed Mar. 8, 1974, Ser. No. 449,274
Int. Cl.² B29C 17/02, 17/14, 24/00
U.S. Cl. 425—304 8 Claims

1. A machine for producing tubular sealing elements comprising a guide member having a longitudinally extending guide opening motor driven intermittent feeding means for withdrawing plastic tubular stock from a source thereof and advancing it along a predetermined path coaxially extending through said guide opening, cutting means located proximate said guide member and movable across said predetermined path of said tubular stock, an axially reciprocatable spindle

forward of and coaxial with said guide opening a motor driven rolling tool mounted on an end of said spindle and coaxially confronting said guide opening and movable with said spindle between advanced and retracted positions proximate and remote from said guide member respectively, means for rotating said spindle, and sequencing means successively advancing said tubular stock along said predetermined path through said



guide opening into engagement with said rolling tool in at least a partially retracted position, interrupting the advance of said tubular stock, advancing said rotating spindle and tool to roll the leading end of said stock, at least partially retracting said tool and advancing said tubular stock, interrupting the advance of said tubular stock and advancing said cutting means across said tubular stock to sever a sealing element therefrom rearwardly of the rolled edge.

3,942,932

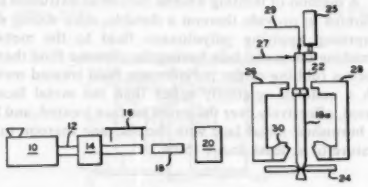
SEALING PARISONS USING PREBLOW AND CONTOURED SEALING SURFACE

Dixie E. Gilbert, Pomona, N.Y., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 850,804, Aug. 18, 1969, Pat. No. 3,686,379. This application May 26, 1972, Ser. No. 257,443

Int. Cl.² B23D *23/03*

U.S. Cl. 425—324 B **5 Claims**



1. Apparatus for sealing and severing an individual open end tube comprising in combination: means for gripping a first end of said tube; means for gripping a second end of said tube; means for effecting a relative movement between said means for gripping said first end and said means for gripping said second end; means to introduce preblow fluid into the interior of said tube; a pair of opposed mold halves movable transversely to the axis of said tube into and out of engagement, each of said mold halves having matching severing edges, each of said mold halves having a bead-forming and holding cavity between said severing edges and a bottom wall-forming surface of each of said mold halves.

3,942,933

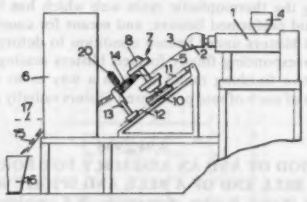
APPARATUS FOR MANUFACTURING HOLLOW ARTICLES, SUCH AS BOWLS, TRAYS, CUPS AND SIMILAR ARTICLES

Johan per Greiljner Svendsen, Kristiansand S, Norway, assignor to Dyno Industrier A/S, Oslo, Norway

Filed June 4, 1974, Ser. No. 476,321

Int. Cl.² B29C *24/00*

U.S. Cl. 425—324 R **3 Claims**



1. An in-line apparatus for the production of hollow articles, such as bowls, trays, cups and similar articles of thermoplastic material by fluid pressure differential molding a continuous sheet of the thermoplastic material comprising:

an extruder having an extruder nozzle for producing the continuous strip of thermoplastic material;

a mold tool including a top and bottom mold half portion;

piston means for opening and closing said mold tool;

a rectilinear guide upon which said mold tool is attached, said guide extending obliquely downward from below said extruder nozzle at an angle to the horizontal plane of between 30° and 60°;

reciprocating means connected to said mold tool for reciprocating said mold tool along said rectalinear guide;

gripping means attached to said rectilinear guide for engaging longitudinal edges of the thermoplastic material immediately prior to the opening of said mold tool and for holding the thermoplastic material while said mold tool returns for enclosure of a new portion of the thermoplastic material.

3,942,934

MOLD ASSEMBLY FOR USE IN PACKAGING MACHINE

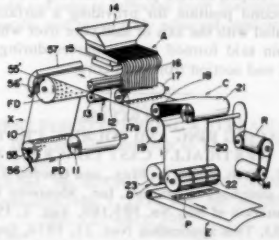
Takenori Momiyama; Keiiti Mizutani; Masakazu Oi, all of Osaka, and Shinji Hanatani, Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Oct. 11, 1974, Ser. No. 514,254

Claims priority, application Japan, Oct. 19, 1973, 48-118083; June 20, 1974, 49-70932

Int. Cl.² B29C *3/02*

U.S. Cl. 425—342 **16 Claims**



1. A mold assembly for use in a blistered package making machine for forming a plurality of blisters in a web of thermoplastic resin film, said mold assembly comprising a first rigid structure; a plurality of preforming molds formed in said first

rigid structure; heating means for heating the thermoplastic resin web, passing over said preforming molds, to a soft, pliable condition; means for causing portions of said thermoplastic resin web, which overhang said preforming molds, to deform to provide preformed blisters seating within said respective preforming molds while the remaining portion of said thermoplastic resin web is substantially elongated; a second rigid structure; a plurality of finishing molds formed in said second rigid structure, said finishing molds being arranged in the same pattern as said preforming molds; heating means for heating the thermoplastic resin web which has been formed with said preformed blisters; and means for causing said preformed blisters under heated condition to deform to provide the corresponding finally formed blisters seating within said respective finishing molds in such a way as to elongate the bottom of each of said preformed blisters radially outwardly.

3,942,935

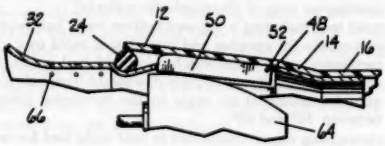
METHOD OF AND AN ASSEMBLY FOR FORMING THE BELL END OF A BELL AND SPIGOT JOINT

Robert Walter Heisler, Somerville, N.J., assignor to Johns-Manville Corporation, Denver, Colo.

Division of Ser. No. 240,401, April 3, 1972, Pat. No. 3,793,427. This application Nov. 26, 1973, Ser. No. 419,186

Int. Cl.² B29C *17/00*

U.S. Cl. 425—393 **10 Claims**



1. In an assembly for forming an inner circumferential groove in a heated end section of a plastic pipe with a circumferential sealing gasket within said groove, said assembly including an elongated core and a circumferential sealing gasket positioned around and against a circumferential surface portion of said core, whereby the heated end section of said plastic pipe is moved over the core and over the gasket by relative movement between said core and heated end sections so as to form said groove with said gasket therein and whereby said end section with said formed groove and gasket therein is subsequently separated from said core, the improvement comprising:

means connected with said core and located to one side of said gasket, said means being movable between a first position to form a ramped surface extending upwardly towards said gasket at an angle with the outer periphery of said core whereby said heated end section moves up said ramped surface prior to moving over said gasket and a second position for providing a surface substantially parallel with the axis of said core over which said gasket within said formed groove moves during separation of said end section from said core.

3,942,936

FACING RING AND POURING CHUTE FOR VERTICALLY CAST CONCRETE PIPE

Frank M. Wells, Aztec, N. Mex., and Gordon J. Black, Nuevo, Calif., assignors to Ameron, Inc., Monterey Park, Calif.

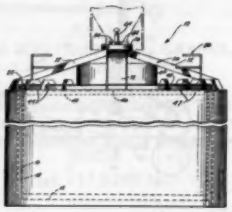
Continuation of Ser. No. 385,189, Aug. 2, 1973, Pat. No. 3,856,453. This application Nov. 21, 1974, Ser. No. 525,820

The portion of the term of this patent subsequent to July 24, 1991, has been disclaimed.

Int. Cl.² B28B *21/04*

U.S. Cl. 425—447 **17 Claims**

1. In a vertically disposed pipe mold having a cylindrical outer mold case, and an inner cylinder disposed concentrically inside the outer mold case to form an annular mold cavity between the outer mold case and the inner cylinder into which concrete is to be poured, apparatus for casting a concrete pipe in the pipe mold comprising a facing ring for encircling the cylinder and for being mounted above the annular mold cavity, the facing ring including a plurality of spaced apart gate means, and means for individually opening and closing the gate means to control the passage of concrete through the facing ring into the mold cavity below it; and a pouring chute assembly for being mounted in a fixed position above the



facing ring, the pouring chute assembly including a base for being positioned above the facing ring and for providing a region onto which concrete is to be poured, and a plurality of radially extending and elongated pouring chutes for extending downwardly from the base to corresponding gate means in the facing ring so that concrete poured onto the base of the pouring chute assembly will be distributed by the individual pouring chutes through the gate means in the facing ring to the annular mold cavity, the facing ring providing an undersurface which will form a shaped annular end section of the cast pipe when concrete is filled to the bottom of the facing ring.

3,942,937

METHOD OF PROVIDING DURABLE, SLICK SLIDING SURFACES ON EXTRUSION FORMING APPARATUS, AND THE PRODUCT THEREOF

Maurice Prober, Fairfield, and Joseph Edward Vostovich, Bridgeport, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed May 16, 1974, Ser. No. 470,398

Int. Cl.² B28B *7/36;* B05D *3/12*

U.S. Cl. 425—461 **12 Claims**

1. A method of treating a metal face of an extrusion forming apparatus to provide thereon a durable, slick sliding surface, comprising applying polysiloxane fluid to the metal face, burnishing the metal face having the siloxane fluid thereon by vigorous rubbing of the polysiloxane fluid treated metal face with a material relatively softer than the metal face being treated, effectively over the entire surface treated, and heating the burnished metal face with the siloxane thereon to a temperature of at least about 150°C.

3,942,938

COMBUSTION SYSTEM FOR PREPARING RADIOACTIVE SAMPLES AND THE LIKE

Niilo H. Kaartinen, Kuusisto, Finland, assignor to Packard Instrument Company, Inc., Downers Grove, Ill.

Filed Dec. 6, 1974, Ser. No. 530,293

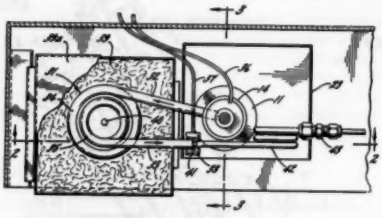
Int. Cl.² F23D *11/38;* G01N *31/12*

U.S. Cl. 431—3 **16 Claims**

1. A process for combusting materials containing radioactive nuclides to permit recovery of the radioactive nuclides, said process comprising the steps of combusting a sample material containing at least one radioactive nuclide in a primary combustion zone, and continuously exhausting said primary combustion zone and passing the exhaust products through a secondary combustion zone while combusting uncombusted materials remaining in said exhaust products

within said secondary zone, said exhaust products being directed in a helical path in the secondary combustion zone so that centrifugal forces drive the exhaust products toward the walls of the secondary combustion zone while intimately mixing the exhaust products with each other to achieve rapid and complete combustion of said uncombusted materials in said secondary zone.

10. Combustion apparatus comprising the combination of a primary combustion zone having means for combusting a sample material placed therein and means for continuously



exhausting said primary zone, and a secondary combustion zone for receiving the exhaust products from said primary chamber, said secondary zone including means for combusting uncombusted materials remaining in said exhaust products in said secondary zone, and means for directing said exhaust products in a helical path in the secondary combustion zone so that centrifugal forces drive the exhaust products toward the walls of the secondary combustion zone while intimately mixing the exhaust products with each other to achieve rapid and complete combustion of said uncombusted materials in the secondary zone.

3,942,939

FLAT FLAME BURNER

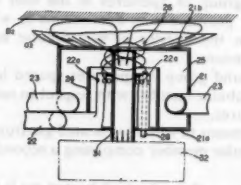
Yuji Matsumura, and Hiroyuki Mitsudomi, both of Nishinomiya, Japan, assignors to Osaka Gas Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 139,709, May 3, 1971, abandoned. This application Mar. 26, 1973, Ser. No. 344,891

Claims priority, application Japan, May 6, 1970, 45-44377[U]; May 9, 1970, 45-45101[U]; Oct. 30, 1970, 45-108339[U]

Int. Cl.² F23D *11/44*

U.S. Cl. 431—215 **20 Claims**



1. A burner comprising a housing provided with a planar exterior wall having a first perforation, means defining a second opening in the housing in axial alignment with said first perforation, gas conduit means having an inner terminal portion coaxial with the said second opening in the housing, said conduit further including plural outlets spaced from the terminus, and inlet means to introduce continuously swirling combustion air into said housing exteriorly of said gas inlet conduit wherein an inner peripheral wall defining said first perforation has an axial dimension smaller than a radial dimension in order to form a flat flame spreading outwardly over said planar exterior wall.

3,942,940

VOTIVE CANDLE AND CONTAINER AND ARRAY THEREOF

William J. O'Shea, 211 Lafayette Road, Nob Hill III, Syracuse, N.Y. 13205

Continuation of Ser. No. 387,127, Aug. 9, 1973, abandoned. This application Jan. 13, 1975, Ser. No. 540,498

Int. Cl.² F23D *3/16*

U.S. Cl. 431—291 **3 Claims**

1. A votive candle array comprising:

a. a plurality of candles initially of a predetermined first height;

b. a plurality of opaque, metal containers, each containing one of said candles and having a flat bottom wall upon which said candle rests, a generally cylindrical side wall, both the inner and outer surfaces of which are light reflective, and an open top, said containers providing the sole enclosures for said candles;

c. four cut-outs are provided in each container side wall at 90° intervals, said cut-outs each extending upwardly from a lower edge a predetermined second height, greater than said first height, above said bottom wall, said side wall being solid and continuous from said lower edge to said bottom wall.

d. a support stand having a plurality of horizontally disposed shelves, each successive shelf being spaced laterally from the forwardly adjacent shelf, and vertically therefrom by a distance substantially equal to said second height; and

e. said containers, with said candles therein, being arranged in side-by-side relation on each of said shelves, and substantially in alignment with the containers on the next succeeding shelf with two of said cut-outs facing the two laterally adjacent containers and one cut-out facing a rearwardly adjacent container, whereby light passing through said cut-outs is reflected from the outer surface of the laterally and rearwardly adjacent containers.

3,942,941

ARRANGEMENT FOR STERILIZING A STREAM OF GAS

John H. Perry, Doraville, Ga., assignor to The Mead Corporation, Dayton, Ohio

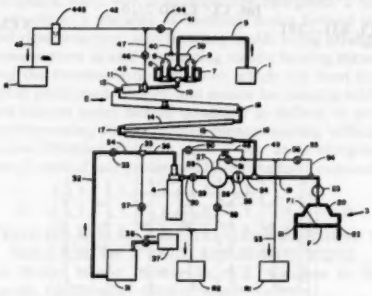
Continuation of Ser. No. 409,986, Oct. 26, 1973, abandoned. This application Nov. 1, 1974, Ser. No. 519,997

Int. Cl.² A61L *3/00*

U.S. Cl. 432—29 **2 Claims**

1. A method of sterilizing a stream of gas flowing under pressure through heater means, retention means, and cooling means interconnected via conduit means with each other and with a point of use, the method comprising heating said stream of gas to a temperature of approximately 300°C. in said heater

means, maintaining said gas at approximately 300°C. for approximately 6 seconds in said retention means, cooling said



gas substantially via said cooling means and supplying the sterilized and cooled gas to a point of use under pressure.

3,942,942

ROTARY TUBULAR FURNACE

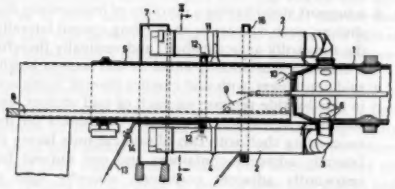
Herbert Deussner, Bensberg-Refrath, and Joachim Fleischer, Cologne, both of Germany, assignors to Klockner-Humboldt-Deutz AG, Germany

Filed July 25, 1974, Ser. No. 491,810

Claims priority, application Germany, July 28, 1973, 2338443

Int. Cl.[2] F27D *15/00*, *15/02*

U.S. Cl. 432—80 7 Claims



1. A rotary tubular furnace with a satellite cooler, comprising:

a plurality of cooling tubes spaced about the circumference of the furnace at the outlet end thereof;

a liquid coolant bath contained in a channel member;

means for supplying liquid to said liquid bath;

at least one tubular influent means connected to each of said cooling tubes, with each of said tubular influent means being provided with a pocket shaped scoop member open in a rotary direction and adapted to intermittently dip into the liquid bath during operation of the furnace; and

means for rotating said tubes about a common horizontal axis so that said scoop members are moved past said bath.

3,942,943

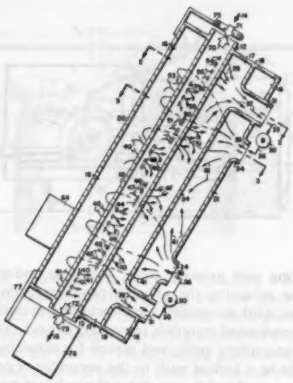
GRAVITY FLOW DISCRETE ARTICLE GAS FLOW ISOLATED THERMAL TREATMENT DEVICE

Everett Howard Andrus, Rte. No. 4, Watertown, Wis. 53094

Continuation-in-part of Ser. No. 449,364, March 8, 1974, Pat. No. 3,850,572. This application Nov. 26, 1974, Ser. No. 527,447

Int. Cl.[2] F27B *9/00*

U.S. Cl. 432—121 8 Claims



1. In a device for heat treating discrete metal articles the combination of:

a tubular member having an inlet end and an outlet end, said tubular member devoid of closure means at said ends,

blower means and heater means to provide heated gas having an elevated temperature and a substantial pressure and velocity,

a first group of apertures in the wall of said tubular member provided with duct means to introduce said heated gas into the interior of said tubular member,

said duct means to introduce said heated gas to the interior of said tubular member comprising a first plenum chamber,

all apertures through which said heated gas is introduced into said tubular member communicating with the interior of said first plenum chamber,

a second group of apertures in the wall of said tubular member provided with duct means to withdraw heated gas from the interior of said tubular member to said blower means,

said second group of apertures spaced longitudinally in said tubular member with respect to said first group of apertures,

said duct means to withdraw heated gas from the interior of said tubular member comprising a second plenum chamber,

all apertures through which heated gas is withdrawn from said tubular member communicating with the interior of said second plenum chamber,

a third group of apertures in the wall of said tubular member provided with duct means to introduce said heated gas into the interior of said tubular member from said first plenum chamber,

said third group of apertures spaced longitudinally in said tubular member with respect to said second group of apertures,

a fourth group of apertures in the wall of said tubular member provided with duct means to withdraw heated gas from the interior of said tubular member to said blower means through said second plenum chamber,

said fourth group of apertures spaced longitudinally in said tubular member with respect to said third group of apertures.

3,942,944

HEATING OF AGGREGATE MATERIAL FOR ASPHALT MIXING

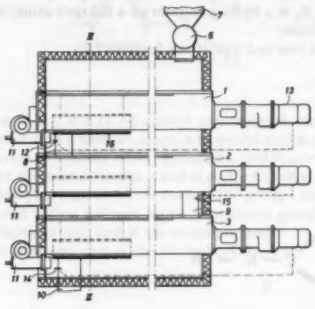
Aage Nielsen, Copenhagen, Denmark, assignor to H. Nielsen & Son Maskinfabrik A/S, Herlev, Denmark

Filed Mar. 13, 1974, Ser. No. 450,919

Claims priority, application Denmark, Mar. 16, 1973, 1462/73

Int. Cl.² F27B 9/02

U.S. Cl. 432—132 6 Claims



1. In an asphalt mixing apparatus, a means for heating granular aggregate material comprising,

a chamber,

conveyor means in the chamber for supporting granular aggregate material and moving it intermittently through the chamber, said conveyor means including a plurality of serially arranged conveyor sections,

each of said conveyor sections having temperature sensing means for sensing the temperature of aggregate material therein,

means for producing flue gases and directing them through the chamber for heating the granular aggregate material in the chamber, said flue gases being chemically inert to the aggregate, and control means connected to and responsive to the temperature sensing means for controlling the temperature of the aggregate by changing the duration of stationary periods between the periods of conveyor movement.

3,942,945

BURNER FOR THE DIRECT HEATING UP OF A FLUID BY ACTION OF THE COMBUSTION

Lucien Delaplace, Sevres, and Jean-Claude Mevel, Sarcelles, both of France, assignors to Stein Industrie, Velizy Villacoublay, France

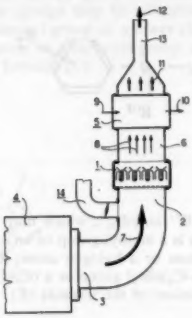
Filed Oct. 8, 1974, Ser. No. 513,169

Claims priority, application France, Oct. 11, 1973, 73.36347

Int. Cl.² F24H 3/14

U.S. Cl. 432—222 8 Claims

1. A grid burner for the direct heating of a combustive fluid by the combustion of combustible substances contacting said fluid, said burner comprising a plurality of parallel fluid feed ramps spaced from one another to define gaps for passage of the combustive fluid, each of said ramps comprising spray nozzles for a liquid fuel and a spraying fluid, injectors for a gaseous fuel, respective superimposed independent feed pipes respectively for said liquid fuel, said gaseous fuel and said spraying fluid, a ramp body constituting an insulating housing for said feed pipes, said spray nozzles and injectors for a gaseous fuel being arranged in alignment in alternating equi-



distant arrangement in said ramps, said nozzles and injectors being coupled to respective of said pipes.

3,942,946

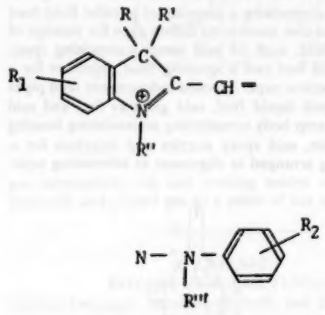
BLACK DYEING OF ACID-MODIFIED POLYESTER FIBER

Tetuo Okaniwa, Minoo, and Sadaharu Abeta, Toyonaka, both of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

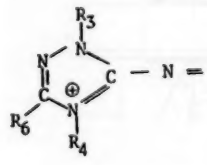
Filed Feb. 5, 1975, Ser. No. 547,152
Claims priority, application Japan, Feb. 5, 1974, 49-15095
Int. Cl.² D06P 1/08
U.S. Cl. 8—26 12 Claims

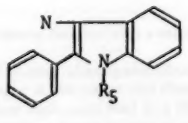
1. A process for dyeing acid-modified polyester fibers black comprising contacting said polyester fibers with a dye bath containing a combination of four kinds of dyes, the combination comprising,

1. at least one yellow or orange dye of the formula (A),

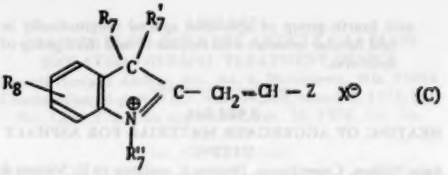


wherein R, R′, R″ and R‴, which may be the same or different, each is a methyl group or an ethyl group; R_1 is a hydrogen atom or a halogen atom; R_2 is a hydrogen atom or a (C_1–C_3)alkyl group or a (C_1–C_3)alkoxy group; and X^- is an anion; of the formula (E)



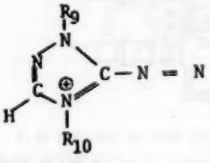


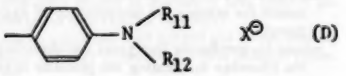
wherein R_3, R_4 and R_5, which may be the same or different, each is a (C_1–C_3)alkyl group or an aralkyl group, in which each of the groups may be substituted with a halogen atom, a hydroxyl group or a lower alkoxy group; R_6 is a hydrogen atom or a carboxyl group; and X^- is an anion; and of the formmula (C)



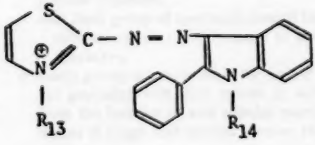
wherein Z is a nitrogen atom-containing monoheterocyclic ring which may be substituted with a lower alkyl group or a lower alkoxy group; R_7, R_7' and R_7'' which may be the same or different, each is a methyl group or an ethyl group; R_8 is a hydrogen atom or a halogen atom; and X^- is an anion;

2. at least one red dye of the formula (D)



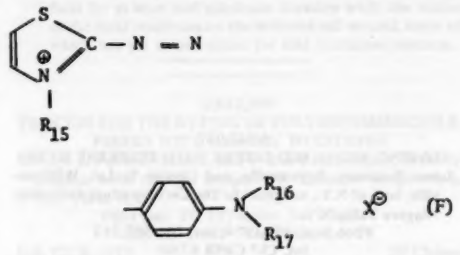


wherein R_9, R_{10}, R_{11} and R_{12}, which may be the same or different, each is a (C_1–C_3)alkyl group or an aralkyl group, in which each of the groups may be substituted with a halogen atom, a hydroxyl group or a lower alkoxy group; and X^- is an anion; and of the formula (E)



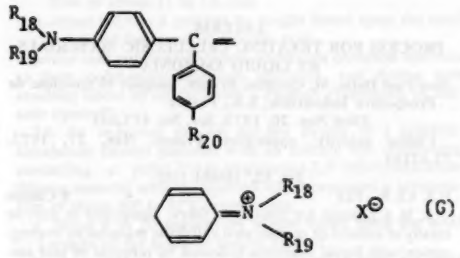
wherein R_{13} and R_{14}, which may be the same or different, each is a (C_1–C_3)alkyl group which may be substituted with a halogen atom, a hydroxyl group or a lower alkoxy group; and X^- is an anion;

3. at least one violet to blue dye of the formula (F),



wherein R_{15} is a (C_1–C_3)alkyl group which may be substituted with a halogen atom, a hydroxyl group, a carbamoyl group or a lower alkoxy group; R_{16} and R_{17}, which may be the same or different, each is a (C_1–C_3)alkyl group or an aralkyl group, in which each of the groups may be substituted with a halogen atom, a hydroxyl group or a lower alkoxy group; and X^- is an anion; and

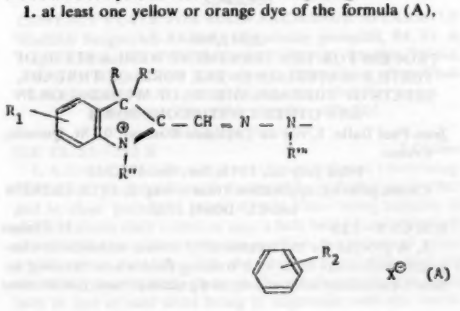
4. at least one dye of the formula (G),



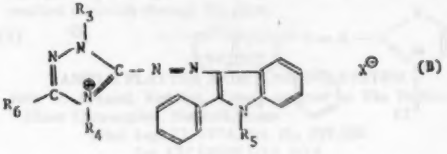
wherein R_{18} and R_{19}, which may be the same or different, each is a (C_1–C_3)alkyl or an aralkyl group, in which each of the groups may be substituted with a halogen atom, a hydroxyl group or a cyano group; R_{20} is a hydrogen atom or an amino group which may be substituted with an alkyl group or a phenyl group; and X^- is an anion.

10. A black dye composition comprising a combination of four kinds of dyes, the combination comprising

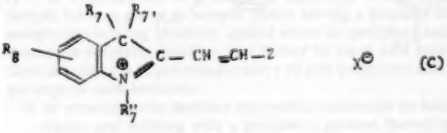
1. at least one yellow or orange dye of the formula (A),



wherein R, R', R'' and R''', which may be the same or different, each is a methyl group or an ethyl group; R_1 is a hydrogen atom or a halogen atom; R_2 is a hydrogen atom or a (C_1–C_3)alkyl group or a (C_1–C_3) alkoxy group; and X^- is an anion; of the formula (B)

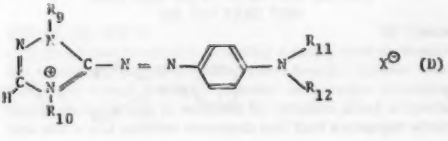


wherein R_3, R_4 and R_5, which may be the same or different, each is a (C_1–C_3)alkyl group or an aralkyl group, in which each of the groups may be substituted with a halogen atom, a hydroxyl group or a lower alkoxy group; R_6 is a hydrogen atom or a carboxyl group; and X^- is an anion; and of the formula (C)

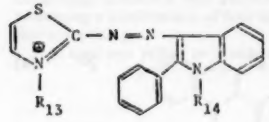


wherein z is a nitrogen atom-containing monoheterocyclic ring which may be substituted with a lower alkyl group or a lower alkoxy group; R_7, R_7' and R_7'' which may be the same or different, each is a methyl group or an ethyl group; R_8 is a hydrogen atom or a halogen atom; and X^- is an anion;

2. at least one red dye of the formula (D)



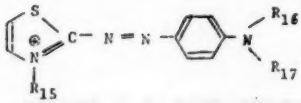
wherein R_9, R_{10}, R_{11} and R_{12}, which may be the same or different, each is a (C_1–C_3)alkyl group or an aralkyl group, in which each of the groups may be substituted with a halogen atom, a hydroxyl group or a lower alkoxy group; and X^- is an anion; and of the formula (E)



(E)

wherein R_{13} and R_{14}, which may be the same or different, each is a (C_1–C_3)alkyl group which may be substituted with a halogen atom, a hydroxyl group or a lower alkoxy group; and X^- is an anion;

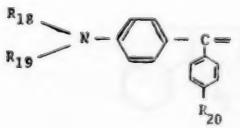
3. at least one violet to blue dye of the (F), (F).

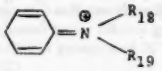


(F)

wherein R_{15} is a (C_1–C_3)alkyl group which may be substituted with a halogen atom, a hydroxyl group, a carbamoyl group or a lower alkoxy group; R_{16} and R_{17}, which may be the same or different, each is a (C_1–C_3)alkyl group or an aralkyl group, in which each of the groups may be substituted with a halogen atom, a hydroxyl group or a lower alkoxy group; and X^- is an anion; and

4. at least one dye of the formula (G),





(G)

wherein R_{18} and R_{19}, which may be the same or different, each is a (C_1–C_3)alkyl or an aralkyl group, in which each of the groups may be substituted with a halogen atom, a hydroxyl group or a cyano group; R_{20} is a hydrogen atom or an amino group which may be substituted with an alkyl group or a phenyl group; and X^- is an anion.

3,942,947

DYEING NOVOLOID FIBERS WITH DISPERSE DYES

James Economy, Eggertsville, and George Y. Lei, Williamsville, both of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Sept. 19, 1974, Ser. No. 507,312

Int. Cl.² C09B 67/00

U.S. Cl. 8—93 **4 Claims**

1. A composition for dyeing novoloid fibers, said composition comprising, per liter,

1. from about ⅛ to about 3⅛ grams disperse dye;
2. from about 30 to about 100 ml benzyl alcohol;
3. from about 10 to about 20 ml acetic acid; and
4. water.

3,942,948

PROCESS FOR TREATING CELLULOSIC MATERIALS BY LIQUID AMMONIA

Jean-Paul Dalle, St. Quentin, France, assignor to Omnium de Prospective Industrielle, S.A., France

Filed Nov. 20, 1973, Ser. No. 417,641

Claims priority, application France, Nov. 27, 1972, 72.42165

Int. Cl.² D06M 1/02

U.S. Cl. 8—125 **8 Claims**

1. In a process for treating a fabric composed in part or totally of natural or regenerated cellulosic material by impregnation with liquid ammonia followed by removal of said ammonia from said fabric, the improvement comprising initially eliminating at least a substantial portion of said ammonia from said fabric by subjecting the fabric to pneumatic drying independent of heating by means of a compressed gaseous ammonia stream.

3,942,949

PROCESS FOR THE TREATMENT WITH A FLUID OF TEXTILE MATERIALS IN THE FORM OF THREADS, SHEETS OF THREADS, SHEETS OF WEBBING OR IN ANY OTHER CONTINUOUS FORM

Jean-Paul Dalle, 1, rue du Capitaine Dumont, 02 St. Quentin, France

Filed July 26, 1974, Ser. No. 492,332

Claims priority, application France, Aug. 2, 1973, 73.28276

Int. Cl.² D06M 1/02

U.S. Cl. 8—125 **11 Claims**

1. A process for the treatment of textile materials in elongated continuous form by a treating fluid whose treating action is essentially independent as a practical matter of the time

of contact beyond a minimum duration between about 0.01 seconds and 10 seconds, comprising:

continuously applying said treating fluid to the outside textile material would on a bobbin or roll, and

continuously unwinding the bobbin or roll at a rate such that the unwound material is subjected to said treating fluid for at least said minimum duration while the action of the fluid continues on the material still wound, some of which has yet to be treated for said minimum duration.

3,942,950
PROCESS FOR THE DYEING OF POLYBENZIMIDAZOLE FIBERS WITH ANIONIC DYESTUFFS

Edward J. Powers, Gillette, and Walter P. Hassinger, Berkeley Heights, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Dec. 27, 1974, Ser. No. 536,807
Int. Cl.² D06P 5/04, 1/68, 3/40
U.S. Cl. 8—173 **20 Claims**

1. An improved process for the dyeing of a polybenzimidazole fibrous material with an anionic dye comprising:

a. reacting said polybenzimidazole fibrous material while in a swollen configuration with salicylic acid to form polybenzimidazonium salicylate, and

b. dyeing said resulting fibrous material with an anionic dyestuff.

5. An improved process for the dyeing of a polybenzimidazole fibrous material with an anionic dye comprising contacting said polybenzimidazole fibers with a liquid provided at an elevated temperature comprising:

a. an organic swelling agent for said polybenzimidazole having a solubility parameter when in contact with the fiber of about 11 to 13, and

b. about 0.05 to 5 percent by weight based upon the total weight of the liquid of salicylic acid,

whereby said polybenzimidazole undergoes chemical reaction to form polybenzimidazonium salicylate, and dyeing said resulting fibers by contact with a dyebath comprising an anionic dyestuff.

14. An improved process for the dyeing of a polybenzimidazole fibrous material with an anionic dye comprising contacting a poly2,2′-(m-phenylene)-5,5′-bibenzimidazole fibrous material with an aqueous liquid provided a temperature of about 40° to 97°C. comprising:

a. about 3 to 20 percent by weight based upon the total weight of the liquid of benzyl alcohol,

b. about 0.05 to 5 percent by weight based upon the total weight of the liquid of salicylic acid, and

c. about 0.03 to 0.3 percent by weight based upon the total weight of the liquid of a surfactant,

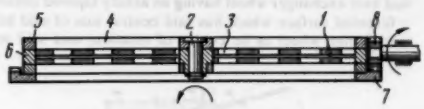
whereby said polybenzimidazole undergoes chemical reaction to form polybenzimidazonium salicylate, and dyeing said resulting fibers by contact with a dyebath comprising an anionic dyestuff.

3,942,951
CONTACT PLATE FOR MASS-EXCHANGE APPARATUS

Vladimir Sergeevich Atoiants, Zagorodny prospekt, 54, kv. 4; Igor Orestovich Protodiakonov, prospekt Morisa Toreza, 106, kv. 43, and Petr Grigorievich Romankov, ulitsa Chaikovskogo, 63, kv. 11, all of Leningrad, U.S.S.R.

Filed Apr. 24, 1974, Ser. No. 463,844
Int. Cl.² B01D 11/04
U.S. Cl. 23—252 R **2 Claims**

1. A contact plate for a mass-exchange column, comprising: two coaxial planer disks with their end faces facing each other and in close proximity, each of said disks being capable of rotation about their common axis, a hole being formed in each of said disks as a slit in the shape of an Archimedean spiral whose centre coincides with the centre of said disk, said slit extending continuously through the whole of the disk, said hole in one of said disks being in alignment with the corresponding hole in the other of said disks, thereby when one of said disks rotates with respect to the other disk said holes at

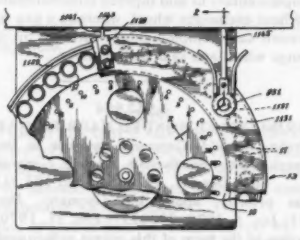


least partially overlap each other and control the flow rate of reactant materials through the plate.

3,942,952
SAMPLE PLATTER MOISTURIZING SYSTEM

John G. Atwood, Redding, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Aug. 22, 1974, Ser. No. 499,586
Int. Cl.² G01N 1/12, 1/14
U.S. Cl. 23—259 **3 Claims**



1. In combination with sampling apparatus including a sample take-up probe, a sample platter having a plurality of sample-cup-holding locations spaced about its periphery and means for rotatably indexing said platter to place said locations sequentially in position for entry of said probe into sample cups in such locations:

a. an annular cover member removably positioned on said platter and defining with a peripheral portion thereof a continuous annular chamber overlying and enclosing said sample cup locations, said cover member containing a single opening into said chamber located to provide access for entry of the sample probe into a cup at a location registering with said opening;

b. means to maintain said cover against rotation with said sample platter, and with said opening in alignment with said probe, whereby sample cups are moved sequentially into registration with said opening as the platter is indexed; and

c. a recess in said platter and open to said chamber for the containment of water to maintain a condition of high humidity within said chamber and thus retard evaporation from the contents of sample cups in said platter locations.

3,942,953
FUME INCINERATOR AND SEAL STRUCTURE THEREFOR

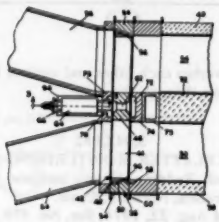
Charles B. Gentry, Grand Rapids, Mich., assignor to Granco Equipment, Inc., Grand Rapids, Mich.

Filed Sept. 24, 1973, Ser. No. 400,314
Int. Cl.² F23G 7/06
U.S. Cl. 23—277 C **10 Claims**

1. In a fume incinerator including a rotary heat exchanger for recuperating heat from hot gases wherein a ceramic heat exchanger wheel having a plurality of passages extending axially therethrough is mounted for rotation about a central axis and a seal member surrounds said heat exchanger wheel

in sealed relationship thereto, the improvement which comprises:

said heat exchanger wheel having an axially tapered circumferential surface which has said central axis of said heat exchange wheel as its center of rotation, and said seal



member including a tapered surface of a size and shape complementary to said tapered circumferential surface of said heat exchanger wheel, whereby a gap seal is formed between said complementary surfaces on said heat exchange wheel and said seal member.

3,942,954

SINTERING STEEL-BONDED CARBIDE HARD ALLOY

Fritz Frehn, Krefeld, Germany, assignor to Deutsche Edelstahlwerke Aktiengesellschaft, Krefeld, Germany

Filed Dec. 31, 1970, Ser. No. 103,312

Claims priority, application Germany, Dec. 2, 1970, 2059251; Jan. 5, 1970, 2000257; Feb. 21, 1970, 2008197

The portion of the term of this patent subsequent to Apr. 30, 1985, has been disclaimed.

Int. Cl.² C22C *1/05, 29/00*

U.S. Cl. 29—182.7 **7 Claims**

1. A sintered steel-bonded carbide hard alloy, comprising from 15% to 80% by weight of a carbide of at least one metal selected from the class consisting of chromium, molybdenum, tungsten, tantalum, niobium, zirconium and titanium and from 20% to 85% by weight of a steel matrix consisting essentially of

0.25 to 0.9 % carbon,
5 to 18.0 % chromium,
2 to 5.0 % molybdenum,
0.3 to 3.0 % copper,
0.1 to 1.0 % vanadium,
0 to 3.0 % manganese,
0 to 1.0 % silicon,
0 to 6.0 % cobalt,
0 to 0.5 % niobium,
0 to 0.01 % boron,
0 to 1.8 % nickel,
balance iron.

3,942,955

REINFORCING WIRE ELEMENT

Joris Moens, Kortrijk, Belgium, assignor to N. V. Bekaert S. A., Zwevegem, Belgium

Division of Ser. No. 287,236, Sept. 8, 1972, Pat. No. 3,900,667, which is a continuation-in-part of Ser. No. 69,623, Sept. 4, 1970, abandoned. This application Apr. 16, 1975, Ser. No. 568,432

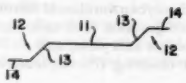
Claims priority, application Netherlands, Sept. 12, 1969, 6913898

Int. Cl.² E04C *5/00*

U.S. Cl. 29—183.5 **4 Claims**

1. A reinforcing element for mixing with a subsequently hardening soft material for increasing the tensile strength of the material and having improved mixability with the material comprising:

a. a wire segment having a length-to-diameter ratio within the range of about 50 to 1 to about 200 to 1,
b. said wire segment having a substantially straight central portion having a curvature of less than 45° and a length of at least one-half of the total length of said wire segment,
c. said wire segment further including a pair of terminal portions each comprising a substantially straight terminal part having a length of at least five times the diameter of said wire segment and further comprising a bending connecting said substantially straight terminal part to said substantially straight central portion,
d. said bending having a radius of curvature less than the diameter of said wire segment and forming an angle of between 90° and 135° between said terminal part and said central portion,
e. each of said terminal portions being so constructed and arranged that a normal to one of said terminal portions at every point therealong passes outside the other of said terminal portions,



f. said element being thusly so constructed and arranged as to inhibit hooking-in of said element with another of said elements during mixing with the soft material.

2. A reinforcing for mixing with a subsequently hardening soft material for increasing the tensile strength of the material and having improved mixability with the material comprising:

a. a wire segment having a length to diameter ratio within the range of about 50 to 1 to about 200 to 1,
b. said wire segment having a substantially straight central portion having a curvature of less than 45° and having a length of at least one-half of the total length of said wire segment,
c. said wire segment further including a pair of terminal portions each having a substantial curvature and a length of at least five times the diameter of said wire segment and said terminal portions being connected by said central portion,
d. said substantial curvature comprising a total absolute bending of at least 60°,
e. said element being so constructed and arranged as to inhibit hooking-in of said element with another said element during mixing with the soft material.

3,942,956

PROCESS FOR ELIMINATING NITROGENOUS INGREDIENTS FROM SOLID FUEL

Shozo Ito, Ichikawa, Japan, assignor to Mifuji Iron Works, Ltd., Tokyo, Japan

Filed Feb. 6, 1975, Ser. No. 547,577

Claims priority, application Japan, July 12, 1974, 49-079949

Int. Cl.² C10L *9/00, 9/02;* **C10B** *57/00;* **C01B** *31/02*

U.S. Cl. 44—1 R **10 Claims**

1. A process for continuously eliminating a nitrogenous ingredient from solid fuels, comprising the steps of:

1. preparing a substantially inert burnt gas containing at most 2% by volume of free oxygen by completely a mixture of a fuel and air or oxygen gas in a combustion chamber;
2. feeding said burnt gas into a conditioning chamber directly connected to said combustion chamber at a predetermined feed rate,
3. simultaneously feeding steam or water and hydrogen gas or other gas containing therein at least 30% volume of

free hydrogen gas into said conditioning chamber at predetermined feed rates;

4. uniformly mixing said burnt gas and said steam or water and said hydrogen gas or hydrogen gas-containing gas within said conditioning chamber to provide a treating gas for eliminating said nitrogenous ingredient, said treating gas having a predetermined temperature and composition;
5. feeding a solid fuel into a treating chamber;
6. feeding said treating gas into said treating chamber, and;
7. treating said solid fuel with said treating gas at a temperature of 650° to 1200°C.

3,942,957

PRODUCTION OF COMBUSTIBLE GASES

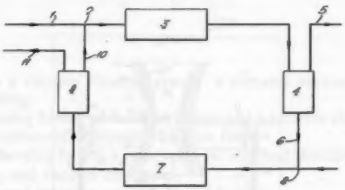
Henry John Francis Stroud, Solihull, England, assignor to British Gas Corporation, London, England

Filed May 7, 1974, Ser. No. 467,666

Claims priority, application United Kingdom, May 14, 1973, 22773/73

Int. Cl.² C10K *3/02*

U.S. Cl. 48—196 R **9 Claims**



2. A method of removing elemental hydrogen from a methane containing gas also containing hydrogen, which method comprises adding to the gas a quantity of a monocyclic aromatic compound, reacting some or all of said monocyclic aromatic compound with hydrogen in the presence of a hydrogenation catalyst to produce a hydrogenated product, separating the hydrogenated product and any remaining monocyclic aromatic compound from the remaining constituents of the gas, dehydrogenating the separated hydrogenated product to regenerate monocyclic aromatic compound, adding the resulting monocyclic aromatic compound to a further quantity of gas from which hydrogen is to be removed, and reacting some or all of the monocyclic aromatic compound with hydrogen of the said gas.

3,942,958

COMPOSITION CONTROL OF GASES

Brian Hoyle Thompson, London, and Henry Lawrence Conway, Solihull, both of England, assignors to British Gas Corporation, London, England

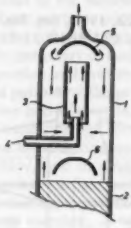
Filed July 31, 1974, Ser. No. 493,485

Claims priority, application United Kingdom, Aug. 3, 1973, 36901/73

Int. Cl.² C01B *2/22*

U.S. Cl. 48—213 **13 Claims**

1. A process for controlling the composition of gases produced by the hydrogenolysis of carbonaceous fuels which process comprises contacting said gas in a vessel with a quenching medium to cool the gas to a temperature lower than that which will support substantial reactions involving any of the components hydrogen, paraffinic hydrocarbons or aromatic hydrocarbons, present in the gas, wherein said quenching is achieved by interposing a stream of insert gas between said gas and the walls of the vessel containing said gas, and admixing a cooling fluid containing a major proportion of monocyclic aromatic compounds with said gas to cool it to temperature at which any higher molecular weight constituents which would be deposited on surfaces are dissolved in said cooling fluid.



3,942,959

MULTILAYERED FLEXIBLE ABRASIVE CONTAINING A LAYER OF ELECTROCONDUCTIVE MATERIAL

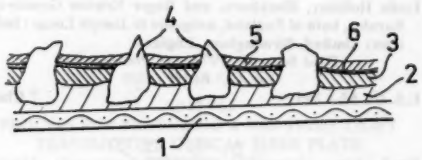
Eric L. Markö, Markaryd; Tore G. H. Strand, Naasjo, and Thorsten W. Sandell, Markaryd, all of Sweden, assignors to Fabriksaktiebolaget EKA, Sweden

Continuation-in-part of Ser. No. 162,938, July 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 774,340, Nov. 8, 1968, abandoned. This application Aug. 13, 1973, Ser. No. 387,748

Claims priority, application Sweden, Dec. 22, 1967, 17777/67; Belgium, Dec. 10, 1968, 67733; United Kingdom, Dec. 16, 1968, 59616/68; Dec. 20, 1968, 9347/68; Italy, Dec. 19, 1968, 25325/68; Canada, Dec. 18, 1968, 38123; Dec. 19, 1968, 154891

Int. Cl.² B24D *11/00*

U.S. Cl. 51—295 **14 Claims**



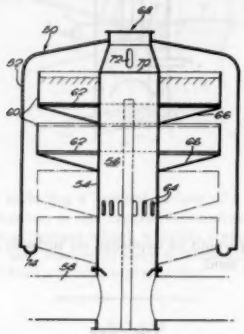
1. A multilayered abrasive article comprising a flexible backing member layer, at least one adhesive layer of synthetic or animal glue on one face of the backing member layer, and abrasive grains embedded in the adhesive layer, the improvement resulting in the reduction of the accumulation during use of electrostatic surface charges comprising (1) the presence of an inner layer in said abrasive article of sufficient electroconductive material selected from the group consisting of metals, metal alloys, metal pigments, metal salts and metal complexes to render said inner layer significantly more conductive to electrostatic charges than said inner layer would be without said electroconductive material, and (2) on each of the two faces of said inner layer an insulating layer of material having significantly lower electroconductivity than said electroconductive material, said two insulating layers being of the same or different material.

3,942,960

APPARATUS AND METHODS FOR CONTACTING GASES OR VAPOURS WITH PARTICULATE SOLID MATERIAL

Maurice Victor Girard, London, England, assignor to The British Ceca Company Limited, London and Croftshaw (Engineers) Limited, Suffolk, both of, England, part interest to each

Filed Apr. 22, 1974, Ser. No. 463,030
Int. Cl.[2] B01D *53/02*
U.S. Cl. 55—74 16 Claims



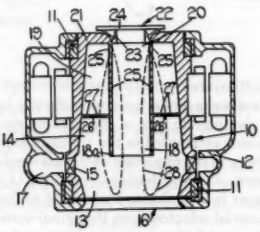
11. In the method of contacting a gas or vapour with a particulate solid material wherein the gas or vapour is passed through a vessel containing said particulate solid material, the improvement wherein said particulate material is contained in a plurality of trays which are supported within said vessel by means of a pillar comprising an interior duct, said pillar and trays having apertures and openings therein respectively which allow passage of the gas or vapour through said particulate solid material between the interior of the vessel and the interior duct of said pillar, and said vessel having ports communicating respectively with the interior of the vessel and said interior duct, passing said gas or vapour through the vessel only via said apertures and openings.

3,942,961

PUMPS

Leslie Holliday, Blackburn, and Roger Newton Greenwood, Burnley, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Sept. 17, 1974, Ser. No. 506,902
Int. Cl.[2] B01D *19/00*
U.S. Cl. 55—203 7 Claims



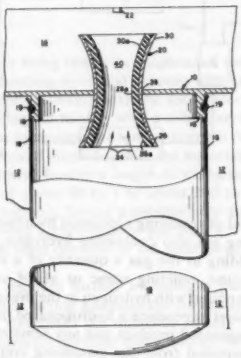
1. A pump including a stator, a rotor mounted within the stator and comprising a frusto-conical first chamber, a second chamber axially aligned with said first chamber and lying adjacent the end thereof having the larger diameter, a first centrifugal impeller arrangement secured between said chambers, the larger end of the frusto-conical first chamber being adjacent said impeller arrangement and the smaller end of the frusto-conical first chamber defining an inlet for the pump, a hollow member having a substantially cylindrical axial through passage mounted co-axially within the second chamber, the diameter of said through passage being less than the smallest diameter of said second chamber, an opening at one end of said member being at the level of said impeller arrangement, the other end of said member being joined to a wall of the second chamber, a second impeller arrangement mounted at the end of said through passage remote from said first impeller for discharging fluid from said through passage, said stator having a passage therein communicating with the first impeller arrangement and with an outlet for the pump and a radial web securing said hollow member to said second chamber, said hollow member and said web being provided with a plurality of holes.

3,942,962

PULSE JET AND VENTURI LINER

Robert W. Duyckinck, New Providence, N.J., assignor to U.S. Filter Company, New York, N.Y.

Filed May 8, 1974, Ser. No. 467,857
Int. Cl.[2] B01D *46/04*
U.S. Cl. 55—302 1 Claim



1. In a pulse jet type dust collector for separating particulate material from a gaseous carrier thereof:

a tube sheet dividing the interior of said dust collector into a clean gas and dirty gas plenum chambers,

an elongated open ended tube of permeable filter media mounted on and suspended from said tube sheet for separating said particulate material from said gaseous carrier by permitted passage of the latter therethrough from the outside to the inside of the filter media,

a rigid venturi element of non-deformable material and of a first predetermined configuration mounted on said tube sheet and disposed in the open end of said tube of permeable filter media, said rigid venturi element defining a bore for countercurrent passage of gaseous carrier and cleaning gas therethrough having an intermediate portion of lesser transverse dimension than that of the terminal portions thereof, and whereby said configuration of said venturi element is at least in part determinative of the air flow characteristics through said permeable filter media the improvement comprising,

an elastically deformable lining member of an external configuration complemental to that of the interior of said rigid venturi element and sized to be deformably insertable into and being retainably mounted within said rigid venturi element in intimate interfacial engagement therewith to modify the internal configuration thereof, said

lining member defining a bore of second predetermined configuration for passage of cleaned gaseous carrier therethrough that is selectively contoured to modify the air flow characteristics attendant said rigid venturi element into which it is inserted.

3,942,963

VACUUM CLEANING SYSTEM

Felix H. Tevis, South Pasadena, Calif., assignor to Tevis-Campbell Corporation, South Pasadena, Calif.

Filed Feb. 15, 1973, Ser. No. 332,599
Int. Cl.² B01D 46/02
U.S. Cl. 55—380 15 Claims

1. In a vacuum cleaning system, a portable vacuum unit, comprising:

a housing having an inlet, an outlet, and a vacuum chamber therebetween through which air flows;

said housing having a removable lid attached thereto defining said vacuum chamber;

a flanged member secured to said housing;

a closed collection filter chamber connected with said inlet, said collection filter chamber including a filter means comprising a pair of separable and substantially hemispherical filter elements including flanged means joining said filter elements and said flanged member, said filter elements being joined so as to form a filter means enclosure adapted to trap particulate matter drawn into said inlet along with air and surrounded by said vacuum chamber thereby permitting evacuation of air from said collection chamber substantially uniformly across the surface of said filter means; and

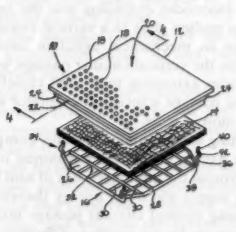
air seal means sealably attaching said lid and said container to prevent a leakage of air therebetween.

3,942,964

CLEAN ROOM PERFORATED FLOOR PANEL

Bernard R. Shuler, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Sept. 26, 1974, Ser. No. 509,430
Int. Cl.² B01D 46/10
U.S. Cl. 55—494 5 Claims



1. A perforated floor panel comprising:

a. a floor pan comprising:

a perforated planar floor portion having a top surface and an opposite bottom surface;

a flange extending downwardly from the periphery of said bottom surface; and,

a ledge formed in said peripheral flange spaced from and generally parallel to the bottom surface of said perforated planar floor portion, said ledge extends inwardly from the portion of said peripheral flange which is adjacent to the periphery of said bottom surface of said planar floor portion and into the space defined by that portion of said peripheral flange adjacent to the periphery of said floor pan bottom surface;

b. a fluid pervious balancing pad removably disposed within the space defined by said peripheral flange and said floor pan bottom surface, and in abutting juxtaposition with said floor pan bottom surface; and,

c. balancing pad retaining means comprising:

a peripheral frame member;

a generally planar grid-like structure of spaced crossed rod members connected to each other at the point of intersection and attached at their ends to said peripheral frame member; and

a plurality of retaining clips spaced equally around and attached to said peripheral frame member, each of said retaining clips comprising:

a resilient elongated rod attached at one end to said peripheral frame member and having its other end free; and,

a tongue formed between the ends of said elongated rod, said tongue projecting outwardly of said grid-like structure and resiliently nestingly engaging said ledge formed in said peripheral flange to captively hold said grid-like structure in spaced relationship to said bottom surface of said floor pan and captively containing said balancing pad between said floor pan bottom surface and said planar grid-like structure and holding said balancing pad against said bottom surface of said planar floor portion.

3,942,965

PROCESS FOR PRODUCING A GAS TIGHT LIGHT TRANSMITTING OPTICAL FIBER PLATE

Masaaki Osagawa; Kunimitsu Kobayashi, and Kenji Nakagawa, all of Saitama, Japan, assignors to Hoya Glass Works, Ltd., Tokyo, Japan

Filed June 17, 1974, Ser. No. 480,448
Claims priority, application Japan, June 15, 1973, 48-67601
Int. Cl.² C03B 37/02
U.S. Cl. 65—4 B 2 Claims

1. A process for producing a light transmitting plate comprising arranging optical fibers or bundles of optical fibers in a die, heating the optical fibers to a temperature ranging between the transition point of the optical fiber glass and the softening point of the optical fiber glass, welding the heated optical fibers together by applying compression under a reduced pressure, releasing the applied compression after the welding of the optical fibers, and maintaining the welded optical fibers at that temperature range at a pressure higher than the pressure during the heating period which is sufficient to cause the shrinkage of voids by the surface tension of the optical fibers.

3,942,966

METHODS OF PREPARING CERAMIC MATERIAL

Karl Kristian Kobs Krøyer; Tage Fredsted, both of Aarhus-Viby, and Gunnar Brocks, Holmstrup, all of Denmark, assignors to Karl Kristian Kobs Kroyer, Aarhus-Viby J., Denmark

Filed Apr. 19, 1973, Ser. No. 352,686
Claims priority, application United Kingdom, Apr. 21, 1972, 18645/72; Jan. 12, 1973, 1781/73
Int. Cl.² C03C 3/22
U.S. Cl. 65—33 7 Claims

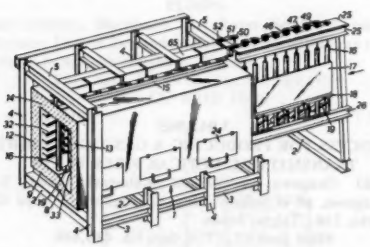
1. A method of preparing a ceramic material comprising particles of a devitrified glass and silicate binder selected from the group consisting of water-glass and finely divided glass, comprising the steps of: forming a mixture of particles of crystallizable glass frit and said silicate binder having a melting point of between 950° and 1,100°C, heating said mixture to a temperature of between 950° and 1,100° C so as to melt said silicate and initiate a crystallization of said glass frit, and cooling the fired mixture to room temperature; and wherein said silicate binder includes waste glass having a maximum particle size of substantially 2 mm and being substantially 40% by weight of said mixture, said crystallizable glass frit comprising a first crystallizable glass frit having a maximum particle size of substantially 2 mm and being 40% by weight of said mixture and a second crystallizable glass frit having a maximum particle size of 160 microns and being 20% by weight of said mixture, and further comprising the step of adding to said mixture a 10 ml water-glass solution having a concentration of substantially 36° Be per 100 g of said mixture, shaping the mixture to form a plate, coating said plate with a chromium oxide enamel, and melting said coated plate at a temperature of substantially 1,050° C.

3,942,967

HEAT TREATMENT OF GLASS SHEETS

Harry Ross Scarlet Jack, Tanworth-in-Arden, and Peter Henry Richards, Kenilworth, both of England, assignors to Triplex Safety Glass Company Limited, London, England

Filed Mar. 12, 1974, Ser. No. 450,373
Claims priority, application United Kingdom, July 20, 1973, 34701/73
Int. Cl.² C03B 25/04, 29/00
U.S. Cl. 65—114 33 Claims



1. Apparatus for heating glass sheets, for example for bending and/or toughening, comprising:

a heating furnace through which glass sheets are to be conveyed in upright disposition;

a conveyor for the sheets extending through the furnace and including a movable support for the lower edge of a sheet and a plurality of spaced-apart near-vertical rollers defining an inclined support extending through the furnace against which a sheet can relax as it is heated; and

driving means for advancing the movable support through the furnace and for driving said near-vertical rollers at a linear surface speed the same as that of the movable support.

16. A method of heating a glass sheet to a thermal condition for further processing, the method utilizing means operable to provide support for the lower edge of the sheet during movement through a heating zone, and upwardly projecting, movable, transient mechanical supporting means extending along the heating zone and providing an effective support plane inclined at a small angle to the vertical, the method comprising:

seating the lower edge of the glass sheet on the lower edge support means;

leaning the upper edge of the sheet against said transient mechanical supporting means with the sheet at a small angle to the vertical;

positioning the lower edge of the sheet on said lower edge support means to offset the lower edge of the sheet from said effective support plane so that the sheet is at a small angle to said plane;

driving the lower edge support means and the upwardly projecting transient mechanical supporting means to advance the supported glass sheet through the heating zone; applying heat to the advancing glass sheet in the heating zone;

controlling the heat transfer to the glass sheet during its advance through the heating zone to induce sufficient heat transfer to the advancing glass sheet for achieving said thermal condition for further processing while the advancing sheet relaxes into further contact with the transient mechanical supporting means; and

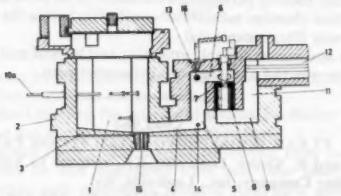
as the sheet is heated to said thermal condition and relaxes into further contact with said transient mechanical supporting means, timing the advance of the supported glass sheet through the heating zone to limit deformation of the sheet to an amount less than the maximum deformation which is acceptable in the processed glass sheet.

3,942,968

METHOD AND APPARATUS FOR MELTING AND SUBSEQUENTLY REFINING GLASS

Helmut Pieper, Lohr am Main, Germany, assignor to Nikolaus Sorg GmbH & Co., Lohr am Main, Germany

Filed Nov. 11, 1974, Ser. No. 522,972
Int. Cl.² C03B 5/02
U.S. Cl. 65—134 13 Claims



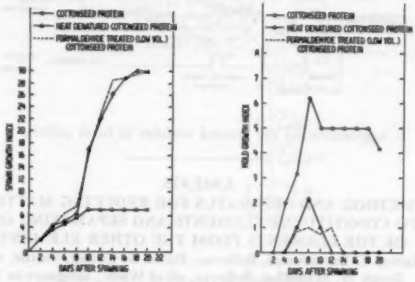
1. Method for melting and refining glass which comprises electrically melting glass in a melting furnace having one or more levels of electrodes extending into the melting furnace and refining the molten glass in a vertical circular passage by subjecting same to mechanical agitation using an agitator positioned within the vertical circular passage with the ends of the agitator blades extending to a point closely adjacent the periphery of the passage whereby the agitator acts on the full volume of the molten glass.

7. Glass melting and refining apparatus comprising melting furnace means having electrodes positioned in one or more levels spaced around the circumference of said furnace means and serving to supply electrical energy thereto, and refining means comprising vertical circular passage means connected to the furnace means having positioned therein agitator means having horizontally rotating blades which extend to a point closely adjacent the wall of said passage.

3,942,969
DELAYED RELEASE NUTRIENTS FOR MUSHROOM CULTURE

Alban David Carroll, Jr., Hartz Road, R.D. 3, Fleetwood, Pa. 19522, and Lee C. Schisler, 317 S. Spark St., State College, Pa. 16801

Filed May 21, 1974, Ser. No. 471,893
Int. Cl.² C05F 5/00; A01G 1/04
U.S. Cl. 71—5 **16 Claims**

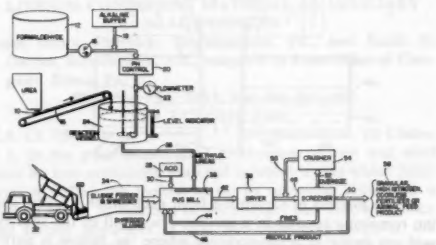


12. A growth medium for mushroom mycelium which comprises the admixture of a mushroom compost and a nutrient improving amount of a denatured protein.

3,942,970
PROCESS FOR TREATING SEWAGE SLUDGE AND FERTILIZER PRODUCTS THEREOF

James M. O'Donnell, Slatersville, R.I., assignor to Orgonics, Inc., Slatersville, R.I.

Continuation-in-part of Ser. No. 196,765, Nov. 8, 1971, abandoned. This application May 23, 1974, Ser. No. 472,714
Int. Cl.² C05F 3/00; C05C 9/00; C02C 3/00
U.S. Cl. 71—12 **21 Claims**



1. A process for treating sludge filter cake material, which process comprises:

a. reducing sludge filter cake material to a particle size of about 1/8th of an inch or less;

b. reducing the moisture content of the reduced sludge particles to between about 30 and 50% to provide a partially dried sludge;

c. introducing the sludge into a reactor and adding an acid to the partially dried sludge in the first section of the reactor to provide an acidic sludge having a pH of from about 3.0 to 5.0;

d. providing an alkaline N-methylol-urea aqueous prepolymer solution wherein the methylol-urea is subject to condensation and comprises a mixture of mono and dimethylol urea, and wherein the prepolymer is prepared by the reaction of from about 1.1 to up to about 2.0 moles of urea per mole of formaldehyde in a reaction time of from about 10 to 30 minutes and at a temperature of from about 30° to 80°C;

e. immediately reacting the prepolymer solution with the partially dried sludge in a second section of the reactor, the reaction carried out while continuously moving the sludge from the inlet to the outlet of the reactor, and at a temperature of from about 30° to 80°C and at a pH of from about 3 to 5, and while vigorously mixing the sludge particles in the first and second sections of the reactor for a time sufficient to complete the reaction and conversion of the prepolymer, and to provide a granular reaction product comprising the condensed polymer and dried sludge material, the condensed polymer having a molecular weight of less than about 300; and

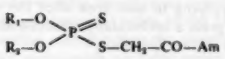
f. drying the reaction product at a temperature of less than 95°C to a moisture content of about 3 to 10%, thereby providing a granular, high-nitrogen, odorless fertilizer or animal feed supplement product.

3,942,971
DITHIOPHOSPHATES AND THEIR USE AS HERBICIDES

Werner Toepfl, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Division of Ser. No. 320,338, Jan. 2, 1973, Pat. No. 3,833,600, which is a continuation-in-part of Ser. No. 160,898, July 8, 1971, abandoned, and a continuation-in-part of Ser. No. 160,897, July 8, 1971, abandoned, which is a continuation-in-part of Ser. No. 782,736, Dec. 10, 1968, abandoned. This application June 17, 1974, Ser. No. 479,731
Claims priority, application Switzerland, Dec. 3, 1967, 17542/67; July 25, 1968, 11206/68
Int. Cl.² A01N 9/36
U.S. Cl. 71—87 **11 Claims**

1. A herbicidal composition for combatting weeds in crop cultures which comprises a herbicidally effective amount of a compound of the formula



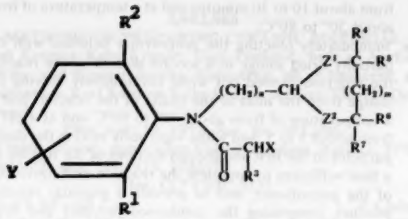
wherein R_1 and R_2 are identical or different and each is an alkyl, alkenyl or alkoxyalkyl radical with up to 5 carbon atoms; and Am is a heterocyclic radical selected from the group consisting of 2-metylpiperidine, 3-methylpiperidine, 4-methylpiperidine and 2,6-dimethylpiperidine; together with a suitable carrier therefor.

3,942,972
DIOXOLANE SUBSTITUTED α-HALOANILIDES AS HERBICIDES

Sidney B. Richter, Chicago, and John Krenzer, Oak Park, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Division of Ser. No. 357,746, June 3, 1974, Pat. No. 3,859,308. This application June 3, 1974, Ser. No. 475,464
The portion of the term of this patent subsequent to Feb. 24, 1993, has been disclaimed.
Int. Cl.² A01N 9/00
U.S. Cl. 71—88 **8 Claims**

1. A herbicidal composition comprising an inert carrier and, as the essential active ingredient, in a quantity toxic to weeds, a compound of the formula



wherein Y is selected from the group consisting of hydrogen, lower alkyl and halogen; R^1 is selected from the group consisting of hydrogen, lower alkyl and lower alkoxy; R^2 is lower alkyl; R^3, R^4, R^5, R^6 and R^7 are independently selected from the group consisting of hydrogen and lower alkyl; X is halogen; *m* is the integer 0; Z^1 and Z^2 are oxygen; and *n* is an integer from 1 to 2.

3,942,973

HERBICIDAL COMPOSITIONS CONTAINING PARA-SUBSTITUTED BENZENESULFONYLUREAS AND SALTS THEREOF AND METHODS OF EMPLOYING SUCH COMPOSITIONS

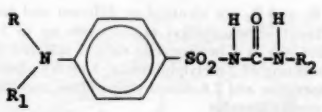
Lawrence S. Wittenbrook, Doylestown, Pa.; Richard J. Timmons, and Raymond D. Fleming, both of Marysville, Ohio, assignors to The O. M. Scott & Sons Company, Marysville, Ohio

Division of Ser. No. 323,372, Jan. 15, 1973, abandoned, which is a continuation-in-part of Ser. No. 157,712, June 28, 1971, abandoned. This application May 13, 1974, Ser. No. 469,525

Int. Cl.² A01N 9/14

U.S. Cl. 71—103 **10 Claims**

1. The method of selectively controlling the growth of undesirable grass in an area in which desirable grass is present, comprisng the step of applying to said area after the emergence of the undesirable grass a herbicidally effective amount of a benzenesulfonylurea of the formula:



where R is methyl or ethyl, R_1 is methyl or ethyl, and R_2 is hydrogen, methyl, or ethyl or a salt thereof selected from the group of alkali metal, alkaline earth metal, ammonium, and ammonium substituted with one to three C_1–C_4 alkyl radicals.

3,942,974

MANGANESE NODULE PELLETIZING

Eugene J. Moreau, Lincoln, R.I.; Richard S. Opalanko, Billerica, Mass.; Norman Schapiro, Sudbury, Mass., and Robert E. Lueders, Needham, Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Feb. 10, 1975, Ser. No. 548,550

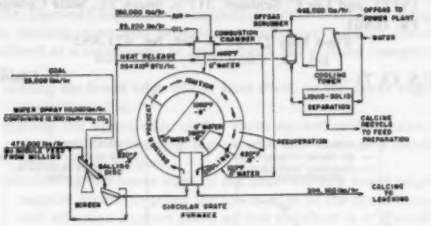
Int. Cl.² C22B 1/08

U.S. Cl. 75—3 **18 Claims**

1. In a process in which manganese nodules are reduced and subsequently leached to extract metal values therefrom wherein the improvement comprises pelletizing the manganese nodules prior to the reduction and leaching by the following steps:

a. grinding the nodules;

b. base exchanging the calcium montmorillonite in the nodules with sodium ions;



c. agglomerating the ground nodules to form pellets.

3,942,975

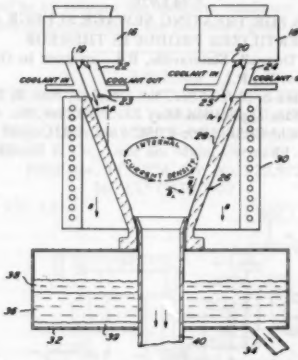
METHOD AND APPARATUS FOR REDUCING MATTER TO CONSTITUENT ELEMENTS AND SEPARATING ONE OF THE ELEMENTS FROM THE OTHER ELEMENTS

James E. Drummond, Bellevue; David B. Chang, Seattle, and Derek W. Mahaffey, Bellevue, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 172,674, Aug. 18, 1971, abandoned. This application July 7, 1972, Ser. No. 269,634

Int. Cl. C22d 7/00; B03c 1/10; B01k 1/00

U.S. Cl. 75—10 R **28 Claims**



1. The process of separating from each other a specie and the remaining species in a gas comprising all of the species, said gas being at a temperature where the specie is partly ionized and the remaining species are insignificantly ionized, comprising:

a. directing said gas through a magnetic field B at a velocity *v*;

b. orienting said magnetic field B relative to said directed gas velocity *v* such that the vectors *v* and B define an angle β between them;

c. permitting the current I created by the interaction of the moving electrons of the ionized specie with the perpendicular component of the magnetic field $B_\perp$ to flow in a closed path;

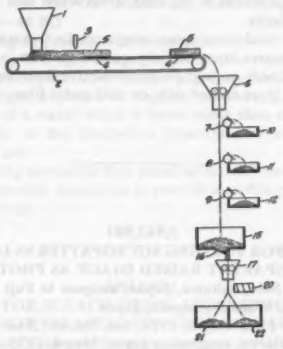
d. using said current I flowing in a closed path to interact with the parallel component $B_\parallel$ of the magnetic field B to generate a force F upon the partly ionized specie to cause both ionized and neutral particles of said partly ionized specie to move at an angle to the direction of movement of the gas; and

e. collecting the selected specie apart from the gas.

3,942,976
METAL RECOVERY PROCESS

Frank M. Cornell, Monterey Park, Calif., assignor to Neo-Pro Corporation, Los Angeles, Calif.

Continuation of Ser. No. 119,285, Feb. 26, 1971, abandoned.
This application June 28, 1973, Ser. No. 374,330
Int. Cl. C21b *15/02*
U.S. Cl. 75—23 17 Claims



1. A process for recovering the metal content of metal containing ores selected from the group consisting of sulfide and oxide ores and mixtures and concentrates thereof comprising igniting an intimately admixed mass consisting essentially of said ore and metallic aluminum to cause the metal content thereof to be converted to metallic form, sintering said ignited mass at a temperature within the range of approximately 1000° to 1500° C. to form a coherent, porous and easily pulverizable mass containing the metal content of said ore in metallic form, and subsequently separating and recovering the metal content therefrom.

3,942,977
PROCESS FOR MAKING IRON OR STEEL UTILIZING LITHIUM CONTAINING MATERIAL AS AUXILIARY SLAG FORMERS

John Henry Fishwick, Downingtown, Pa., and Emile O. Dahlen, Birmingham, Ala., assignors to Foote Mineral Company, Exton, Pa.

Filed Mar. 24, 1975, Ser. No. 561,189
Int. Cl.² C21C *7/00*
U.S. Cl. 75—30 10 Claims

1. In the pyrometallurgical production of iron and steel from an iron-containing material in which a slag which functions to refine the molten metal by removing impurities is formed in situ by reaction of the primary flux lime with silica and silicate impurities in said iron-containing material, the improvement which comprises using a material which consists essentially of a lithium-containing mineral as an auxiliary flux to promote reaction between the primary flux lime and said silica and silicate impurities and fluidize said slag.

3,942,978
METALLURGICAL METHOD

Karl-Erik Oberg, and Lars-Gunnar Norberg, both of Hagfors, Sweden, assignors to Uddeholms Aktiebolag, Hagfors, Sweden

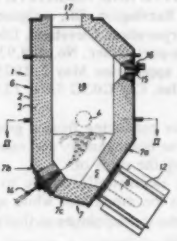
Filed Sept. 11, 1974, Ser. No. 505,171
Claims priority, application Sweden, Nov. 28, 1973, 7316039; Apr. 3, 1974, 7404473; Apr. 3, 1974, 7404474; May 22, 1974, 7406840; June 14, 1974, 7407845
Int. Cl.² C21C *7/00, 5/52*
U.S. Cl. 75—51 11 Claims

1. A process for the production of molten metal comprising directly reducing a reducible metal oxide to metal by reaction with a reducing agent present in a body of molten metal in a tiltable converter having,

means for introducing the metal to be treated and means for removing the metal after treatment; at least one tuyere for introducing a gas/solid suspension into the converter at a level that will be below the surface of the molten metal when the converter is in its vertical operating position;

said converter having at least one heating zone spaced away from the converter, the heating zone having at least one channel in liquid communication with the converter, the channel opening into the converter at a level that will be below the surface of the molten metal when the converter is in its vertical operating position and essentially in the region of that point in the converter which is the deepest point when the converter is in its vertical operating position; said heating zone being filled with metal and having means for heating the contents of the zone by electric induction heating;

the process comprising introducing molten or unmolten metal into the converter, heating the metal in the heating



zone by electric induction heating so that a body of molten metal is created in the converter and in the heating zone and a temperature gradient is established between the molten metal in the heating zone and the molten metal in the converter thereby forcing hotter metal from the heating zone out into the deepest region of the converter outside the channel opening:

fluidizing the metal oxide in the carrier gas to form a suspension and injecting the suspension containing at least 5kg. metal oxide per cubic meter of carrier gas (measured at normal temperature and pressure) into the body of molten metal in the converter through at least one of said tuyeres, directing the suspension towards that region of the converter where the heating channel is located so as to bring about replacement of the hotter metal in the deepest region of the converter outside the channel opening by colder metal from other parts of the converter;

controlling the reduction temperature by adjusting the supply of electric power to the induction heating means; removing slag from the body of molten metal whilst still retaining molten metal in the heating channel and then tapping molten metal from the converter.

3,942,979
IMAGING SYSTEM

Lewis O. Jones, Webster, and Robert Mermelstein, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 30, 1974, Ser. No. 474,746
Int. Cl.² G03G *9/00*
U.S. Cl. 96—1 SD 15 Claims

1. An electrostatographic imaging process comprising the steps of providing an electrostatographic imaging member having a recording surface, forming an electrostatic latent image on said recording surface, and contacting said electrostatic latent image with a developer mixture comprising classified toner materials electrostatically clinging to the surface of

classified high surface area carrier materials, said classified toner materials having a particle size number distribution with a fine index ratio of less than about 2.50, a particle size volume distribution with a coarse index ratio less than about 1.50, and a particle size distribution wherein less than about 30.0 percent by number of the toner particles have an average particle size diameter of less than about 5 microns, about 25% of the particles have a diameter between about 8 microns and about 12 microns, and less than about 5% by number of the toner particles have an average particle diameter greater than about 20 microns, said classified high surface area carrier materials having a specific surface area of at least about 150 cm^2/gram and a particle size volume distribution geometric standard deviation of less than about 1.3, whereby at least a portion of said finely-divided toner particles are attracted to and deposited on said recording surface in conformance with said electrostatic latent image.

3,942,980

ION MODULATOR DEVICE AND METHOD OF USING IN POSITIVE AND NEGATIVE MODES

Shou Ling Hou, Barrington, Ill., assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 488,936, July 16, 1974, abandoned. This application May 2, 1975, Ser. No. 574,044

Int. Cl.² G03G *5/04, 13/22*

U.S. Cl. 96—1.5 **6 Claims**

1. A process for producing from a graphic original copies displaying pagewise homogeneity and essentially free of background comprising the steps of:

1. applying an electrostatic charge to a photoconductive surface of an ion modulator while applying a large bias potential of the same polarity as that of the charge to said ion modulator,
2. projecting upon said ion modulator a pattern of light and shadow corresponding to said graphic original,
3. projecting ions upon a conductive surface of said ion modulator opposite from said photoconductive surface while applying a bias potential less than said large bias potential to said ion modulator, whereby ions are transmitted through said modulator in a pattern corresponding to said original,
4. creating a latent electrostatic image corresponding to said pattern upon a dielectric surface in the path of said transmitted ions, and
5. developing said latent electrostatic image, said ion modulator being a member selected from the group consisting of (*a*) a conductive screen having a photoconductor coated on at least one side thereof, an electrically insulating layer coated on the other side thereof and a thin metal film applied to said electrically insulating layer (*b*) a conductive screen overcoated with a photoconductive layer, said photoconductive layer being coated on one side thereof with a thin metal film (*c*) a conductive screen having an electrically insulating layer partially coated thereon, a thin metal film coated only on said electrically insulating layer and a photoconductive layer coated only on said metal film and (*d*) a conductive screen having a photoconductive layer partially coated thereon, a thin metal film coated only on said photoconductive layer and a photoconductive layer coated only on said metal film, said bias potentials being applied between said film and said screen during steps of applying an electrostatic charge and projecting ions and being defined by the relationships

$$|V_L - V_B| \geq |V_{block}|$$

with $V_B > V_L > 0$ and $V_{block} < 0$

and

$$|V_D - V_B| \geq |V_{block}|$$

with $V_D < V_B < 0$, and $V_{block} < 0$

when said ions are of negative polarity and by the relationships

$$V_L - V_B \geq V_{block} > 0$$

with $V_B < V_L < 0$

and

$$V_D - V_B \geq V_{block} > 0$$

with $V_D > V_B > 0$

where V_L is the modulator potential in the light areas, V_B is the bias potential, V_{block} is the blocking potential and V_D is the modulator potential in the dark areas when said ions are of positive polarity.

6. An ion modulator comprising a conductive screen having photoconductive layer partially coated thereon, a thin metal film coated only on said photoconductive layer and a photoconductive layer coated only on said metal film.

3,942,981

METHOD FOR FORMING MICROPATTERNS UTILIZING A TRANSPARENT RAISED IMAGE AS PHOTOMASK

Masamichi Sato, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed May 6, 1974, Ser. No. 467,544

Claims priority, application Japan, May 4, 1973, 48-50426

Int. Cl.² G03C *5/00, 5/06*

U.S. Cl. 96—36 **15 Claims**

1. A method for forming micropatterns comprising

forming a transparent raised image on a photosensitive layer of a photographic material,

uniformly exposing said photosensitive layer through said transparent raised image to parallel light to which said photosensitive layer is sensitive, so that the light intensity at the edges of said transparent raised image is non-uniform such that the portions of the photosensitive layer underlying said edges are not exposed, and

developing said photosensitive layer to form a micropattern corresponding to the outlines of said transparent image.

3,942,982

METHOD FOR CONTROLLING THE DEGREE OF SIDE-TCH IN THIN OXIDE FILMS BY PHOTO-ETCHING PROCESS

Hiroshi Yanazawa, Tokyo; Norikazu Hashimoto, Tokorozawa; Mikio Ashikawa, Koganei, and Kikuo Douta, Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed May 6, 1974, Ser. No. 467,606

Claims priority, application Japan, May 4, 1973, 48-49097

Int. Cl.² G03C *5/00;* **B60B** *9/00*

U.S. Cl. 96—36 **9 Claims**

1. A photo-etching method comprising effecting reactor between an organic composition consisting essentialy of an organic compound selected from the group consisting of alcohols, phenols and phenol derivatives and the surface of a solid oxide thin film having chemisorbed hydroxy groups on said surface, at a temperature above the boiling point of said organic compound and at a pressure above atmospheric pressure in an autoclave, the temperature and pressure in said autoclave being sufficient so that said organic compound reacts with said chemisorbed hydroxyl groups, applying a film of a photosensitive organic polymer onto the solid oxide thin film, irradiating a predetermined area of the photosensitive organic polymer film by light, removing a portion of the polymer film by dissolution to form a mask having a predetermined pattern, and selectively etching said solid oxide film by means of said mask.

3,942,983

ELECTROLESS DEPOSITION OF A NON-NOBLE METAL ON LIGHT GENERATED NUCLEI OF A METAL MORE NOBLE THAN SILVER

Umberto Di Blas, Carcare (Savona), and Franco Knirsch, Ferrania (Savona), both of Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed June 9, 1967, Ser. No. 644,792

Int. Cl.² G03C *5/24, 1/00*

U.S. Cl. 96—48 PD **12 Claims**

1. An imaging process which comprises

a. exposing to a light image photosensitive medium having a photosensitive layer comprising a composition which upon light exposure is capable of directly generating nuclei of a metal which is more noble than silver and is catalytic to the electroless deposition of a non-noble metal, and

b. providing non-noble free metal selectively on said nuclei by electroless deposition to provide a visible print of said light image.

3,942,984

PROCESS FOR BLEACH-FIXING CHROMOGENICALLY COLOR PHOTOGRAPHIC SILVER HALIDE MATERIAL

Max Heilmann, Cologne, Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 12, 1973, Ser. No. 340,089

Claims priority, application Germany, Mar. 17, 1972, 2212905

Int. Cl.² G03C *5/32, 7/16, 7/00, 5/38*

U.S. Cl. 96—60 BF **7 Claims**

1. A process of producing colored photographic images from a color photographic silver halide material containing at least 2 grams of silver halide per square meter by imagewise exposure and color development wherein the silver image formed by color development from the silver halide emulsion is oxidized and subsequently removed through the use of a bleach-fixing bath, said silver oxidation being accompanied by reduction of the dyes formed chromogenically during the color development, and wherein the reduced dyes are then reoxidized to restore their original color, wherein the improvement comprises in the reoxidation method the bleach-fixing bath is followed by treatment of the film with an aerated oxidation bath containing an effective amount of the iron-III-complex of an amino polyacetic acid selected from the group consisting of nitrilo tri-acetic acid, ethylenediamine tetra-acetic acid, N-hydroxyethyl-ethylene-diamine -N,N′,N′-tri-acetic acid, diethylene triamine penta-acetic acid, 1,3-propylene diamine tetra-acetic acid, N-β-hydroxy-ethyl-1,3-propylene diamine tri-acetic acid, o-phenylene diamine tetra-acetic acid, and 1,2-cyclohexylene diamine tetra-acetic acid.

3,942,985

HIGH CONTRAST, RAPID ACCESS, AIR STABLE, REGENERABLE IRON CHELATE DEVELOPER SOLUTIONS

Norman Newman, and Richard S. Fisch, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 391,506, Aug. 24, 1973, abandoned. This application Mar. 28, 1975, Ser. No. 563,086

Int. Cl.² G03C *5/30, 5/26*

U.S. Cl. 96—66.3 **4 Claims**

1. An aqueous, high-contrast, air-stable, rapid access, non-fixing developer solution which comprises

a. at least one iron chelate developer and

b. at least one compound from the group of ascorbic acid, sugar-type derivatives of ascorbic acid and stereoisomers and diastereoisomers of ascorbic acid and its sugar-type derivatives.

3,942,986

PHOTOGRAPHIC ELEMENT COMPRISING A FOGGED, DIRECT-POSITIVE HETERODISPERSED SILVER HALIDE EMULSION AND A FOGGED, DIRECT-POSITIVE MONODISPERSED SILVER HALIDE

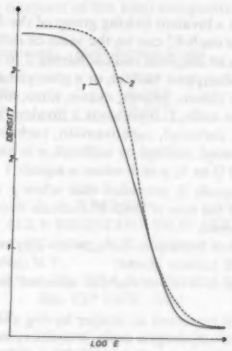
Raymond Leopold Florens, Edegem, Belgium, assignor to AGFA-GEVAERT, N.V., Mortsel, Belgium

Filed June 3, 1974, Ser. No. 476,159

Claims priority, application United Kingdom, June 8, 1973, 27427/73

Int. Cl.² G03C *1/76, 1/28*

U.S. Cl. 96—68 **8 Claims**



1. A direct-positive photographic element comprising a support and coated thereon, a monodispersed direct-positive silver halide emulsion comprising surface fogged silver halide grains of which at least 95 percent by weight have a diameter which is within about 40 percent of the mean grain diameter and a heterodispersed direct-positive silver halide emulsion comprising surface fogged silver halide grains of which at least 10 percent by weight have a diameter which for at least 40 percent deviates from the mean grain diameter, said monodispersed and heterodispersed emulsions having been individually fogged.

3,942,987

PHOTOGRAPHIC MATERIALS WITH BALLASTED, ALKALI CLEAVABLE AZO DYES

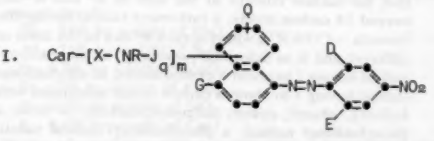
Richard A. Landholm; Jan R. Haase, both of Rochester, N.Y., and James J. Krutak, Sr., Kingsport, Tenn., assignors to Eastman Kodak Company

Continuation-in-part of Ser. No. 331,727, Feb. 12, 1973, abandoned. This application Feb. 5, 1974, Ser. No. 439,789

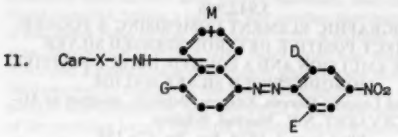
Int. Cl.² G03C *3/00, 1/40, 1/76, 1/10*

U.S. Cl. 96—73 **98 Claims**

1. A photosensitive element comprising a support having thereon at least one photosensitive silver halide emulsion layer and one of said layers having associated therewith a cyan image dye-providing compound having a formula as follows:

I. 

or

II. 

wherein

Car represents a ballasted carrier moiety which, as a function of oxidation of said compound under alkaline conditions, cleaves off from said compound releasing a diffusible dye;

X represents a bivalent linking group of the formula -R^2-L_p-R^2_p- where each R^2 can be the same or different and each represents an alkylene radical having 1 to about 8 carbon atoms; a phenylene radical; or a phenylene radical substituted with chloro, bromo, cyano, nitro, methoxy, methyl, carboxy or sulfo; L represents a bivalent radical selected from oxy, carbonyl, carboxamido, carbamoyl, sulfonamido, sulfamoyl, sulfinyl or sulfonyl; n is an integer having a value of 0 or 1; p is 1 when n equals 1 and p is 1 or 0 when n equals 0, provided that when p is 1 the carbon content of the sum of both R^2 radicals does not exceed 14 carbon atoms;

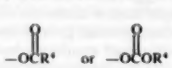
R represents a hydrogen atom, or an alkyl radical having 1 to about 6 carbon atoms;

J represents a bivalent radical selected from sulfonyl or carbonyl;

m and q each represent an integer having a value of 0 or 1;

Q represents a hydrogen atom, a hydroxy radical or a radical having the formula -NHCOR^3 or -NHSO$_2$R^3 wherein R^3 is an alkyl radical having 1 to about 6 carbon atoms, an alkyl radical having 1 to about 4 carbon atoms substituted with hydroxy, cyano, sulfamoyl, carboxy or sulfo; benzyl phenyl, or a phenyl radical substituted with carboxy, chloro, methyl, methoxy or sulfamoyl;

G represents a hydroxy radical, a salt thereof, or a hydrolyzable acyloxy group having the formula:



wherein R^4 is an alkyl radical having 1 to about 18 carbon atoms, phenyl or phenyl substituted with chloro or nitro;

D represents a halogen atom, a cyano radical, a nitro radical, a trifluoromethyl radical, an alkyl radical having 1 to about 6 carbon atoms, an alkoxy radical having 1 to about 6 carbon atoms, a carboxy radical, a carboxylic acid ester having the formula —COOR^4 wherein R^4 is as described previously, a fluorosulfonyl radical, a —SO$_2$-phenyl radical or a —SO$_2$-phenyl radical substituted with hydroxy, chloro, carboxy, sulfamoyl, methyl or methoxy; a sulfo radical, a sulfamoyl radical having the formula —SO$_2$NR^{5}R^6 wherein R^5 represents hydrogen or an alkyl group having 1 to about 6 carbon atoms and R^6 represents hydrogen, an alkyl radical having 1 to about 6 carbon atoms, an alkyl radical having 1 to about 4 carbon atoms substituted with hydroxy, cyano, sulfamoyl, carboxy or sulfo; a benzyl radical, a phenyl radical, a phenyl radical substituted with hydroxy, sulfonyl, sulfamoyl, carboxy or sulfo; an alkyl carbonyl radical having 1 to about 8 carbon atoms, or a phenyl carbonyl radical, with the proviso that the carbon content of the sum of R^5 and R^6 not exceed 14 carbon atoms; a carbamoyl radical having the formula —CON(R^5)$_2$ wherein each R^5 can be the same or different and is as described previously; an alkylsulfonyl radical having 1 to about 8 carbon atoms; an alkylsulfonyl radical having 1 to about 6 carbon atoms substituted with hydroxy, phenyl, cyano, sulfamoyl, carboxy or sulfo; a phenylsulfonyl radical; a phenylsulfonyl radical substituted with hydroxy, sulfonyl, sulfamoyl, carboxy or sulfo; or D can represent a substituent having the formula Car-[X-(NR-J)$_q$]$_m$- or Car-X-J-, provided that the Car-[X-(NR-J)$_q$]$_m$ -substituent on the naphthalene nucleus of Formula I is replaced by an M group or the Car-X-J-NH-substituent on the naphthalene nucleus of Formula II is replaced by a Q group wherein Car, X, J, R, q and m are as described previously.

E represents a hydrogen atom, a halogen atom, a nitro radical, a cyano radical or a trifluoromethyl radical;

M represents a hydrogen atom, a carboxy radical, a carboxylic acid ester having the formula -COOR^4 wherein R^4 is as described previously, a sulfo radical, a sulfamoyl radical having the formula —SO$_2$NR^{5}R^6, a carbamoyl radical having the formula —CON(R^5)$_2$ wherein R^5 and R^6 are as described previously, an alkylsulfonyl radical having 1 to about 8 carbon atoms; an alkylsulfonyl radical having 1 to about 6 carbon atoms substituted with cyano or hydroxy; a phenylsulfonyl radical or a phenylsulfonyl radical substituted with sulfamoyl, carboxy, fluorosulfonyl or methoxy;

with the proviso that there be no more than one sulfo radical and no more than one carboxy radical present in said compound.

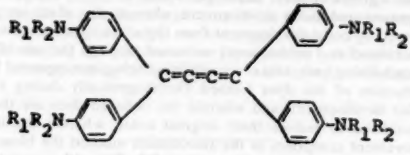
3,942,988

PHOTOSENSITIVE COMPOSITION CONTAINING A POLYHALOGENATED INITIATOR AND A CUMULENE DYE FORMER

Pabitra Datta, Lyndhurst, Ohio, assignor to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed May 28, 1974, Ser. No. 473,773
Int. Cl.² G03C 1/52
U.S. Cl. 96—90 R **4 Claims**

1. A composition of matter useful in photochemical reproduction comprising a cumulene compound having the general formula:



where R_1 and R_2 are the same or different alkyl or aryl radical and each

group can be positioned at any other carbon on the benzene ring;

an organic polyhalogenated initiator solid at room temperature and is capable of promoting free radical reaction with said cumulene compound upon exposure to light; and

one or more solvents suitable to dissolve the cumulene compound and the organic polyhalogenated initiator.

3,942,989

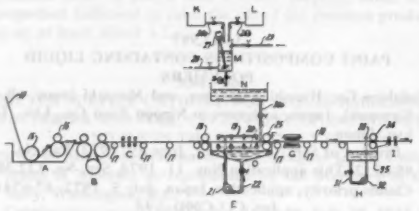
WHITE RUST PREVENTION FOR ZINC COATED SURFACES

John T. Mayhew, Box 156, Sunset Drive, Toronto, Ohio 43964

Continuation-in-part of Ser. No. 83,003, Oct. 22, 1970, abandoned. This application June 15, 1972, Ser. No. 263,317
Claims priority, application Japan, Sept. 13, 1971, 46-70471
Int. Cl.² C09D 5/08
U.S. Cl. 106—14 **10 Claims**

1. In a method of forming a white rust inhibiting solution for application as a protective film on zinc coated surfaces of a ferrous metal workpiece; preparing a first solution by adding

sodium dichromate to ethylene glycol and employing at least a stoichiometric amount of the glycol, reacting them and forming a substantially concentrated aqueous solution; preparing a second solution by adding potassium dichromate to ethylene glycol and employing at least a stoichiometric amount of glycol, reacting them and forming a substantially concentrated aqueous solution; mixing the two solutions in substantially equal proportions from the standpoint of their respective original glycol contents, and diluting the mixed solution with water to provide a practical and effective white rust inhibiting master solution for application to the workpiece.



3,942,990

METHOD FOR PRODUCING FOAMED CERAMICS

Carl Bengt Alfred Engström, Uttran; Hans Georg Klang, Sodertalje, and Gösta Persson, Bromolla, all of Sweden, assignors to EUROC Administration AB, Malmo, Sweden

Filed July 9, 1973, Ser. No. 377,689

Claims priority, application Sweden, July 13, 1972, 9231/72

Int. Cl.² C03C *3/22*

U.S. Cl. 106—40 R **8 Claims**

1. A method for the manufacture of foamed ceramics comprising 60 – 75% silica from a starting composition capable of forming, when heated, a viscous, sintered and porous mass, said starting composition comprising

a. at least one silica-containing material selected from the group consisting of:
fly ash obtained from waste-heat boilers,
dust removed from waste gases emanating from electrometallurgical processes, and
dust trapped in stone crushing plants, and
sand

and

b. a product containing both ferrous compounds and readily carboniferous substances,
said compounds and substances being capable of impairing pore formation,

which method comprises mixing with the starting composition

I. silicon carbide, and

II. a strongly oxidizing agent selected from the group consisting of MnO_2,$NaNO_3$ and $KMnO_4$ capable of oxidizing the ferrous compounds into ferric compounds and the carbon of the readily oxidizable carboniferous compounds and the carbon of the SiC into gaseous compounds under the heating process, gaseous compounds from the SiC being formed after the composition has begun to melt, thereby to cause the pore formation to take place.

3,942,991

SiO_2-$ALPO_4$GLASS BATCH COMPOSITIONS

Nils Tryggve E. A. Baak, Ridgefield, Conn., assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 465,739, June 21, 1965, abandoned. This application Oct. 3, 1969, Ser. No. 863,697

Int. Cl.² C03C *3/06, 3/08*

U.S. Cl. 106—52 **13 Claims**

1. A glass batch composition for producing a glass having a linear coefficient of thermal expansion of from about 4×10^{-7} to about 20×10^{-7} over the temperature range of from 0°–300°C., said glass batch composition consisting essentially of an admixture of the following components in the indicated ranges of mole percents of the total composition:

Component	Mole Percent Range
SiO_2	70–87
$AlPO_4$	5.0–10.0
TiO_2	2.0–10.0.

3,942,992

CHEMICALLY RESISTANT SILICATE GLASS

James E. Flannery, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Nov. 18, 1974, Ser. No. 524,677

Int. Cl.² C03C *3/04*

U.S. Cl. 106—52 **3 Claims**

1. A chemically resistant glass essentially free from alkali metal oxides and B_2O_3 and exhibiting a weight loss not over about 0.05 mgs./cm.² when exposed to a 5% by weight HCl solution at 95°C. for 24 hours and a weight loss not over about 0.5 mgs./cm.² when exposed to a 5% by weight NaOH solution at 95°C. for 6 hours consisting essentially of, as calculated in cation percent on an oxide basis, 59–70% SiO_2, 9–15% $Al0_{1.5}$, 5–25% BaO, 0–17% CaO, 0–7% ZnO, the total BaO + CaO + ZnO being 15–30%, and at least 2% but less than 5% ZrO_2.

3,942,993

METHOD OF SEALING ADJOINING PARTS OF AN EVACUATED VESSEL WITH SOLDER GLASS

Coenraad Maria La Grouw; Cornelus Wilhelmus Theresia Van Den Wittenboer, and Hendrik Jan Hubers, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 180,902, Sept. 15, 1972, abandoned. This application Feb. 22, 1973, Ser. No. 334,867

Claims priority, application Netherlands, May 18, 1968, 6807090

Int. Cl.² C03C *3/04, 3/10, 3/30*

U.S. Cl. 106—53 **3 Claims**

1. A resultant solder glass for joining abutting surfaces of parts of an evacuated vessel consisting essentially of a basic non-crystallizing solder glass having a coefficient of thermal expansion which is higher than that of the material of the surfaces to be joined admixed with a comminuted glass having a coefficient thermal expansion less than 40×10^{-7} for increasing the stress build-up temperature of the basic non-crystallizing solder glass, said resultant solder glass having a coefficient of thermal expansion which corresponds to that of the material of the surfaces to be joined, said basic glass consisting essentially of:

70 – 85% by weight of PbO
10 – 21% by weight of B_2O_3
0 – 4.5% by weight of ZnO
0 – 10% by weight of Al_2O_3
0 – 4.5% by weight of SiO_2
0 – 0.6% by weight of CoO

having admixed therewith a quartz glass, a borosilicate glass or an aluminosilicate glass.

3,942,994
EARLY STRENGTH CEMENTS

Ransom James Murray, Gravesend, and Arthur William Brown, London, both of England, assignors to The Associated Portland Cement Manufacturers Limited, London, England

Filed Sept. 23, 1974, Ser. No. 508,663
Claims priority, application United Kingdom, Oct. 2, 1973, 45972/73
Int. Cl.² C04B *7/02, 7/35*
U.S. Cl. 106—89 **8 Claims**

1. An early strength hydraulic cement comprising from 15 to 90 percent by weight, based on the cement, of an alkali metal calcium aluminate phase formed in the calcium oxide-alumina-alkali metal oxide systems by the presence of at least one alkali metal oxide in a total amount of alkali metal oxide in excess of the solid solution limit thereof in cubic tricalcium aluminate, at least part of said at least one alkali metal oxide being sodium oxide and the balance of the cement being predominantly calcium silicates.

3,942,995
NOVEL PAPER COATING COMPOSITION

Atsushi Ichikawa; Norihiko Adachi; Masayoshi Kawanabe, all of Yokkaichi; Yozi Hisada, Akashi, and Yuichi Kohzaki, Takasago, all of Japan, assignors to Kanegaufchi Chemical Industries, Co. Ltd., Osaka, Japan

Filed Jan. 22, 1973, Ser. No. 325,797
Claims priority, application Japan, Jan. 25, 1972, 47-9234
Int. Cl.² C08L *89/00;* **C08H** *1/00*
U.S. Cl. 106—124 **13 Claims**

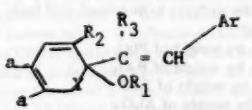
1. A paper coating composition comprising (A) a pigment as a main ingredient and (B) as a binder for said pigment an alkali decomposition product of a yeast produced by heating said yeast with alkali at 30°–100°C for ten minutes to ten hours, said yeast being decolored prior to alkali decomposition with sodium boron hydrate as a reducing agent.

3,942,996
RADIATION SENSITIVE RECORDING MATERIAL

Gunther Arnold, Ulm; Gabor Paal, Stuttgart; Alfred Wilhelm, Ulm, all of Germany; Kurt Halfar, Meinier-Ge, Switzerland, and Hans Peter Vollmer, Ulm, Germany, assignors to AGFA-Gevaert Aktiengeselischaft, Leverkusen, Germany

Filed Dec. 26, 1973, Ser. No. 427,535
Claims priority, application Germany, Dec. 22, 1972, 2262894
Int. Cl.² C08K *5/15;* **C08L** *1/08*
U.S. Cl. 106—176 **7 Claims**

1. Radiation sensitive recording material comprising a sheet comprised of a radiation sensitive organic halogen compound capable of producing hydrohalide by the action of ultraviolet light and an organic chromogenic compound capable of changing its color by reaction with hydrohalide and a layer forming substance containing a polymer for forming said organic halogen compound and said organic chromogenic compound in a layer wherein the improvement comprises the chromogenic compound is an arylvinylpyran or arylvinylthiopyran of the formula



wherein

Ar represents a phenyl or naphthyl group;
both a's taken together represent a group necessary for completing an aryl group condensed to the pyran or thiopyran ring;
Y represents oxygen or sulfur
R_1 represents hydrogen, alkyl, alkenyl or aryl
R_2 and R_3 are the same or different and represent each hydrogen, alkyl, phenyl or both together an alkylene bridge.

3,942,997
PAINT COMPOSITIONS CONTAINING LIQUID POLYMERS

Tadahiro Go; Hiroshi Yaginuma, and Masaaki Inoue, all of Kawasaki, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Division of Ser. No. 375,102, June 29, 1973, Pat. No. 3,884,712. This application Nov. 11, 1974, Ser. No. 522,382
Claims priority, application Japan, July 5, 1972, 47-67411
Int. Cl.² C09D *3/48*
U.S. Cl. 106—285 **6 Claims**

1. A paint composition comprising a pigment and as a vehicle a liquid polymer of 90 – 50% by weight comprising 1,3-pentadiene and 10 – 50% by weight of 1,3-butadiene, the polymer having a number average molecular weight of 300 – 10,000 and an iodine number of at least 250 and being capable of forming hydrocarbon solvent-insoluble coatings.

3,942,998
MOLYBDATE ORANGE PIGMENT WITH IMPROVED THERMAL STABILITY

James Francis Higgins, Livingston, N.J., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Nov. 6, 1974, Ser. No. 521,523
Int. Cl.² C09C *1/20*
U.S. Cl. 106—298 **15 Claims**

1. In a process for preparing molybdate orange pigment in aqueous medium by contacting an aqueous solution containing soluble salts of molybdate, sulfate and chromate with a salt of lead to form an aqueous slurry of precipitated pigment and applying porous silica and alumina to said precipitated pigment,

wherein the improvement comprises adding from 0.1 to 30% by weight of a soluble boron compound, calculated as B_2O_3, to said aqueous medium.

3,942,999
PIGMENTS

John James Hinley, Middlesbrough, and David Malcolm Porter, Yarm, both of England, assignors to British Titan Limited, Billingham, Teesside, England

Filed Aug. 15, 1974, Ser. No. 497,615
Claims priority, application United Kingdom, Sept. 22, 1973, 44538/73
Int. Cl.² C09C *1/36;* **C08J** *3/00*
U.S. Cl. 106—300 **19 Claims**

1. A pigmentary titanium dioxide the particles of which carry diisopropanolamine in an amount of from 0.05 to 2% by weight based on the weight of pigment.

2. A pigmentary titanium dioxide as claimed in claim 1 which the particles also carry one or more hydrous metal oxides in an amount of from 0.5 to 25% (as oxide) by weight based on the weight of pigment.

3,943,000

ALKYLENE OXIDE MODIFIED CEREAL FLOURS AND PROCESS OF PREPARING THE SAME

Peter J. Ferrara, Ridge Road, Cornwall, N.Y. 12518

Filed June 7, 1974, Ser. No. 477,486

Int. Cl.[2] C13L *1/08*; C08B *31/00*, *31/10*; C04B *11/22*

U.S. Cl. 127—33 9 Claims

1. In the process of modifying flours and starches by treating such with acid to produce an acid modified product having a pH of up to about 2.5, when measured in a 10% water slurry; the improvement which comprises directly reacting said acid modified flour or starch with a lower alkylene oxide in a proportion sufficient to raise the pH of the reaction product up to, at least, about 3.5.

3,943,001

SILVER SULFIDE CATHODE FOR LIQUID AMMONIA BATTERIES AND FUEL CELLS CONTAINING SULFUR AND H_2S IN THE ELECTROLYTE

Melvin H. Miles, Murfreesboro, Tenn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 163,638, July 19, 1971, abandoned. This application July 5, 1973, Ser. No. 376,784

Int. Cl.[2] H01M *10/00*

U.S. Cl. 136—6 LN 5 Claims

1. An electrochemical cell having an anode and a cathode and using acid acting liquid ammonia electrolytes, comprising:

a. an insoluble, reducible cathode maerial consisting of a silver sulfide compound,

b. said acid acting liquid ammonia electrolyte containing sulfur and H_2S in solution,

c. said silver sulfide compound being consumed in the cathodic reaction with the silver undergoing the change in oxidation state in accordance with the completely reversible reaction

$$Ag_2S + 2e^- \leftrightarrows 2Ag + S^=$$

d. said electronically conducting silver sulfide cathode material which is insoluble in the liquid ammonia being quantitatively reduced therein.

3,943,002

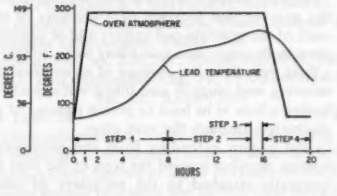
DEVICE FOR DRYING NEGATIVE PLATES AND PLATES MADE THEREWITH

Robert F. Scheuerle, Philadelphia, and John F. Vinkler, Hatoboro, both of Pa., assignors to ESB Incorporated, Philadelphia, Pa.

Filed Feb. 25, 1975, Ser. No. 552,949

Int. Cl.[2] H01M *35/30*; F26B *3/00*

U.S. Cl. 136—33 6 Claims



1. A method of drying wet formed negative storage battery plates without oxidation which comprises in sequence:

a. placing the wet formed negative plates in piled configuration in an enclosed chamber with an atmosphere therein;

b. sealing the chamber;

c. introducing steam into the chamber;

d. circulating the atmosphere in the chamber and adding heat and steam thereto at a chosen temperature profile to provide a drying cycle until the plates are dry;

f. with circulation continuing, providing a cooling cycle by:

1. introducing an inert gas other than steam into the chamber;

2. stopping the introduction of steam while continuing the introduction of inert gas other than steam;

3. stopping the introduction of heat; and,

4. cooling the atmosphere in the oven until the temperature of the plates is taken below a chosen value.

3,943,003

PADDED SOLAR CELL CONTACTS

Robert John Dendall, Gaithersburg, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Dec. 4, 1973, Ser. No. 421,563

Int. Cl.[2] H01L *31/04*, *21/34*

U.S. Cl. 136—89 19 Claims

1. A solar cell comprising a semiconductor material having a p-n junction therein, an electrode covering a portion of the top surface of said cell and including a land portion for attachment to an interconnector, a pad of thermally insulating material on said surface beneath said land portion of said electrode, and an anti-reflective coating covering at least those portions of said cell top surface not covered by said electrode, said pad and anti-reflective coating consisting of the identical material.

3,943,004

LEAD CHLORIDE ELECTRODE FOR SEAWATER BATTERY

Harold Nickolas Honer, Raleigh, N.C.; Francis P. Malaspina, Yardley, and William J. Martini, Fairless Hills, both of Pa., assignors to ESB Incorporated, Philadelphia, Pa.

Filed Feb. 25, 1975, Ser. No. 552,950

Int. Cl.[2] H01M *6/00*

U.S. Cl. 136—100 M 6 Claims

1. A seawater battery which comprises a metallic anode, a cathode and a means for separating the cathode from the anode, the cathode comprising active material mix and a grid, the active material mix comprising lead chloride and lead oxide wherein the ratio of lead oxide to lead chloride is within the range of about 1 part by weight lead oxide to 100 parts by weight lead chloride and about 10 parts by weight lead oxide to 100 parts by weight lead chloride.

3,943,005

PROCESS FOR THE MANUFACTURE OF AN ELECTRODE MATERIAL CONTAINING SILVER AND TUNGSTEN CARBIDE

Konrad Mund, Erlangen-Sieglitzhof, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 6, 1973, Ser. No. 394,866

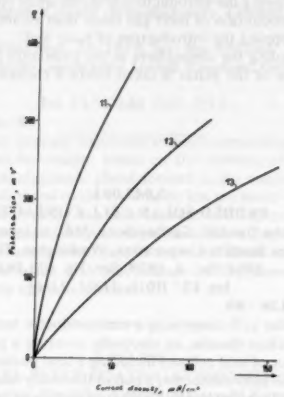
Claims priority, application Germany, Sept. 12, 1972, 2244702

Int. Cl.[2] H01M *4/86*

U.S. Cl. 136—120 FC 8 Claims

1. A process for preparing silver containing tungsten carbide particles adapted for use in manufacturing electrodes for fuel cells, which process comprises forming a suspension of finely-divided particles of tungsten carbide in an aqueous solution of a tungstate, adding to said suspension a solution of a silver salt, thereby forming a mixture of a precipitate of silver tungstate, and tungsten carbide particles, separating said

mixture from said suspension, reducing the silver tungstate in said mixture to metallic silver and tungsten, and carburizing



said metallic tungsten to tungsten carbide, to obtain particles of silver containing tungsten carbide.

3,943,006

METHOD OF MAKING A FUEL CELL ELECTRODE

Bernard Baker, Brookfield Center, and Martin Klein, Brookfield, both of Conn., assignors to Energy Research Corporation, Danbury, Conn.

Continuation of Ser. No. 428,826, Dec. 27, 1973, abandoned, which is a continuation of Ser. No. 200,222, Nov. 18, 1971, abandoned. This application Oct. 1, 1974, Ser. No. 510,996

Int. Cl.² H01M 4/06

U.S. Cl. 136—120 FC **11 Claims**

1. A method for use in producing electrode structure for fuel cells comprising the steps of:

a. blending particles of noble metal black, particles of dry polytetrafluoroethylene and particles of a soluble bulking agent in a liquid in which said bulking agent is insoluble, said polytetrafluoroethylene constituting at least 10 percent of the combined weight of said noble metal black and said polytetrafluoroethylene;

b. filtering liquid from said blend to form a filtered mixture;

c. subjecting said filtered mixture to rolling forces to form a sheet of fibrillated polytetrafluoroethylene containing noble metal black and bulking agent; and

d. removing the remainder of said liquid from said sheet.

3,943,007

BATTERY OF STORAGE CELLS

Roger Lebrun, La Queue en Brie, France, assignor to Saft-Societe des Accumulateurs Fixes et de Traction, Romainville, France

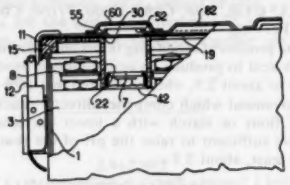
Filed May 17, 1974, Ser. No. 470,973

Claims priority, application France, May 22, 1973, 73.18485

Int. Cl.² H01M 2/12

U.S. Cl. 136—170 **19 Claims**

1. Battery comprising several storage cells arranged adjacently and side by side in a general casing closed by a main lid having first openings, each storage cell comprising a bleed valve for the gases which it emits and two terminals connected by external electrical connectors to terminals of any adjacent storage cell, said battery comprising means for directing and conveying the gases from the respective cells liable to be emitted via the valves outwardly via said first openings formed in the said lid, said means comprising a dummy lid positioned between the said main lid and the storage cells, said dummy lid being perforated directly above said electrical connectors and also comprising funnels having first ends leading outwardly into the said first openings of the said main lid and having second ends mounted around respective outlets of the



valves of said storage cells, and means including second openings in said lid forming a part of an air flow circuit for effecting the cooling of the said electrical connectors, said air flow circuit being separate from the means for directing and conveying said emitted gases.

3,943,008

BLOW MOLDED GANG-TYPE VENT FOR A MULTIPLE-ELL ELECTRIC STORAGE BATTERY

Ernest Clyde Schaumburg, North St. Paul, Minn., assignor to Standard Oil Company, Chicago, Ill.

Filed Sept. 17, 1973, Ser. No. 398,213

Int. Cl.² H01M 2/12

U.S. Cl. 136—177 **9 Claims**

1. A dimensionally flexible leak-proof, joint-free, blow-molded one-piece thermoplastic resinous hollow gang-type vent with vent plugs for a plurality of the filling wells of a multiple-cell battery comprising:

a. a top member;

b. a skirt integrally molded with said top member and peripherally and integrally attached at its upper end to said top member and extending downward from said top member;

c. a bottom member integrally molded with said top member and said skirt and peripherally and integrally attached to said skirt at its lower end, said bottom member comrises:

1. vent plugs of a number and location corresponding to the number and location of a plurality of the filling wells of the multiple-cell battery and of suitable dimensions to fit snugly into said filling wells, to thereby form a fluid-tight fit in the absence of an external means for securing said plugs in said filling wells, each vent plug having a hole in its base to permit passage of gases and electrolyte through the vent plug;

2. a flat region extending from the periphery of said bottom member toward the tops of the vent plugs and integrally attached to the periphery of said bottom member; and

3. a ring around the top of each vent plug connecting said flat region to the top of each said vent plug and integrally attached to both, said ring distributing stresses and permitting dimensional flexibility in said vent to compensate for structural variations in said vent or said battery; and

d. a first tube integrally molded with said top member, skirt, and bottom member and extending outwardly from said skirt to vent gases and electrolyte escaping from said

battery to a point removed from the location of said battery,

wherein the combination of said top member, skirt, bottom member, and first tube is a leak-proof, joint-free, integral, unitary, hollow, structure made up of a sole part.

3,943,009

POROUS CERAMIC BATTERY VENT

Julius Carl Hipp, Elm Grove, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

Filed Nov. 30, 1973, Ser. No. 420,447
Int. Cl.² H01M 2/12; C04B 21/00
U.S. Cl. 136—177 7 Claims

1. A porous, fired ceramic battery vent in the form of fused homogenous particulate matter comprising:

an inorganic filler material comprising individual particles having a particle size no larger than about 600 microns and being present in an amount of about 80% to about 95% by weight, said filler material containing aluminum and/or silicon oxide;

a glass binder present in an amount of about 20% to 5% by weight, said binder having a melting point in the range of about 1,000°F to 2,500°F;

said filler material having a melting point in excess of said binder material and having about 50% to 75% of the particles in the 400 to 600 micron range and about 50% to 25% of the particles in the 200 to 300 micron range; and

said fired vent material having an open porosity of about 25% to about 50% and being substantially acid resistant.

3,943,010

PROCESS FOR PRODUCING AUSTENITIC FERROUS ALLOYS

Albert G. Hartline, III, Albany, N.Y., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed June 12, 1974, Ser. No. 478,482
Int. Cl.² C23C 11/16; C22C 38/04
U.S. Cl. 148—31.5 3 Claims

1. An article of manufacture comprising a solid ferrous alloy consisting essentially of from about 21–45% manganese, from about 10–30% chromium, balance essentially iron, and having at its surface from about 0.85–3% nitrogen with a lesser nitrogen content in its interior than at its surface, said article having an austenitic surface and a two phase interior of austenitic and ferrite.

3,943,011

DEFORMABLE COMPOSITE MATERIAL

John A. Dromsky, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 235,297, March 16, 1972, Pat. No. 3,795,297. This application Aug. 31, 1973, Ser. No. 393,538
Int. Cl.² B32B 15/00
U.S. Cl. 148—34 4 Claims

1. A composite metal laminate material comprising an inner layer of austenitic stainless steel material sandwiched between and metallurgically bonded to a pair of relatively thicker outer metal layers formed of a plain low carbon steel material which normally displays a yield point if deformed while a substantial part of its carbon content is present as interstitial carbon, said stainless steel material being in annealed condition and being characterized by the presence of integranular carbide precipitate therein, said low carbon steel material being in annealed condition and being modified to have such a small proportion of its carbon content present as interstitial carbon that said bonded steel layers are deformable without displaying a yield point.

3,943,012

MAGNETIC RECORDING MEDIUM

Yasuo Tamai; Masashi Aonuma; Matsuaki Nakamura; Hiroshi Agawa, and Goro Akashi, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 19, 1974, Ser. No. 498,337
Claims priority, application Japan, Aug. 18, 1973, 48-92721
Int. Cl.² H01F 1/02
U.S. Cl. 148—105 5 Claims

1. A magnetic recording medium comprising a support having thereon a magnetic recording layer comprising a binder and a ferromagnetic alloy powder, said magnetic recording layer having a coercive force of about 700 to 1500 oersteds in the oriented direction of the ferromagnetic powder and a residual magnetic flux density of about 1500 gausses or higher, the residual magnetic flux density of which after storage for 160 hours in an atomosphere of 60° C and 90% RH is 85% or higher of the initial value thereof before said storage, and said ferromagnetic alloy powder comprising the reaction product of reducing a mixed solution containing Fe, Co and Cr ions with a borohydride compound reducing agent, said mixed solution containing metal ions ranging from 0.01 to 0.5 mole/liter in concentration, such that said ferromagnetic alloy powder comprises about 65 to 89% Fe, about 7 to 34% Co, and about 0.5 to 5% Cr, said percentages being by weight.

3,943,013

TRIAC WITH GOLD DIFFUSED BOUNDARY

Richard W. Kennedy, Skaneateles, and Edward G. Tefft, Auburn, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Oct. 11, 1973, Ser. No. 405,490
Int. Cl.² H01L 21/225
U.S. Cl. 148—187 11 Claims

8. A method according to claim 1 wherein said step of masking said openings comprises covering said openings with a low temperature coating selected from the group consisting of lacquer and wax.

3,943,014

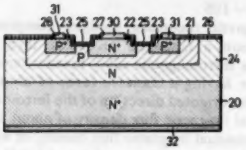
PROCESS FOR THE FABRICATION OF SILICON TRANSISTORS WITH HIGH DC CURRENT GAIN

Yutaka Yoshizawa, Niiza, Japan, assignor to Sanken Electric Company Limited, Japan

Filed Jan. 31, 1975, Ser. No. 546,126
Claims priority, application Japan, Feb. 7, 1974, 49-16092; Feb. 8, 1974, 49-15919; Feb. 22, 1974, 49-21211; Mar. 9, 1974, 49-27573
Int. Cl.² H01L 21/223
U.S. Cl. 148—187 13 Claims

1. In a process for the fabrication of a high DC current gain transistor, the improvement comprising the steps of providing a monocrystalline silicon wafer having a top surface and having formed therein an emitter region of one conductivity type, a base region of the opposite conductivity type from said emitter region, and a collector region of said one conductivity type, at least said emitter and base regions extending to said top surface, said emitter region being confined within said base region whereby a P-N junction is formed therebetween, forming a groove in said top surface so as to extend along said

P-N junction, said groove having a depth less than the depth of said emitter region, forming a silicon oxide layer at least



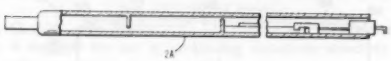
over said groove, and heating said wafer in a hydrogenous atmosphere.

3,943,015

METHOD FOR HIGH TEMPERATURE SEMICONDUCTOR PROCESSING

Paul W. Ing, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 375,190, June 29, 1973, Pat. No. 3,842,794. This application July 8, 1974, Ser. No. 486,555
Int. Cl.² H01L 7/36
U.S. Cl. 148—188 **6 Claims**



1. In processing a monocrystalline silicon substrate, the steps comprising:

A. oxidizing a surface portion of said substrate in an oxidizing atmosphere at a first elevated temperature in the range of about 900°C to about 1200°C;

B. transferring the wafer of Step A at said first elevated temperature to a heated second atmosphere of oxygen and an inert diluent gas and thermally stabilizing said substrate therein at a second temperature in the range of about 800° to about 900°C;

C. establishing a third processing atmosphere by introducing a conductivity determining impurity into said second atmosphere and forming therein a said impurity doped oxide over said surface portion of said substrate at said second temperature;

D. reforming said third atmosphere to said second atmosphere of oxygen and a diluent inert gas at said second temperature with said substrate disposed therein,

E. heating said substrate in said reformed second atmosphere to a third temperature in the range of about 900° to about 1200°C;

E. annealing said substrate at said third temperature in said reformed second atmosphere to remove fast surface states in said substrate from said doped oxide into said substrate;

G. removing said substrate from said reformed second atmosphere for cooling to ambient temperatures; and

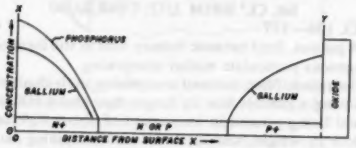
H. cooling the process tube in said reformed second atmosphere from said third temperature to a fourth temperature in the range from about 800° to about 900°C.

3,943,016

GALLIUM-PHOSPHORUS SIMULTANEOUS DIFFUSION PROCESS

Raymond L. Marcotte, Auburn, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Continuation of Ser. No. 95,533, Dec. 7, 1970, abandoned. This application Feb. 5, 1973, Ser. No. 329,356
Int. Cl.² H01L 7/36
U.S. Cl. 148—189 **10 Claims**



1. A process for forming a junction within a silicon wafer having opposed, substantially parallel major surfaces comprising:

providing an oxide layer on one major surface,

locating the wafer in a closed tube containing only an inert non-oxidizing atmosphere and a non-limiting source of gallium and phosphorus vapors,

heating the wafer and vapor source within the closed tube to a temperature in excess of 1000° C for about 35 to 40 hours to generate a vaporous mixture of gallium and phosphorus without oxidizing the surface of the wafer not previously provided with said oxide layer,

diffusing gallium through the oxide layer and into the one major surface to form a P conductivity type layer while substantially blocking phosphorus vapor penetration through the oxide layer, and simultaneously,

diffusing both gallium and phosphorus into the remaining major surface of the wafer while maintaining the atmosphere in the closed tube saturated with phosphorus vapor to establish a phosphorus diffusion profile of the form shown in FIG. 3 with a magnitude and depth exceeding that of gallium entering the wafer through the remaining major surface to form an N conductivity type layer.

3,943,017

EXPLOSIVE COMPOSITION COMPRISING HMX, RDX, OR PETN AND A HIGH VISCOSITY NITROCELLULOSE BINDER PLASTICIZED WITH TMETN

Franklin B. Wells, Memphis, Tenn., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 26, 1974, Ser. No. 454,900
Int. Cl.² C06B 25/34, 25/32, 25/28
U.S. Cl. 149—19.8 **5 Claims**

1. A self-supporting, high powered, brisant, explosive composition composed essentially entirely of explosive ingredients and consisting essentially of:

a. 46 to 87% by weight of a finely divided explosive selected from the group consisting of cyclotrimethylenetrinitramine, cyclotetramethylenetetranitramine, and pentaerythritol tetranitrate, and mixtures thereof having an average particle size not greater than about 25 microns;

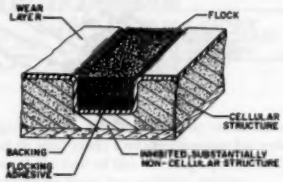
b. 1 to 4% by weight of explosive, high-viscosity, nitrocellulose binder; and

c. 12 to 49% by weight of the liquid explosive plasticizer trimethylolethane trinitrate, the ratio of said plasticizer to said nitrocellulose being in the range of 6.5/1 to 15/1.

3,943,018
DECORATIVE SURFACE COVERINGS

Robert K. Petry, Morris Plains, and Harry A. Shortway, Glen Rock, both of N.J., assignors to Congoleum Industries, Inc., Kearny, N.J.

Continuation of Ser. No. 169,847, Aug. 6, 1971, abandoned, which is a division of Ser. No. 27,374, April 10, 1970, Pat. No. 3,674,611. This application Aug. 6, 1973, Ser. No. 385,981
Int. Cl.² B32B 5/20
U.S. Cl. 156—79 20 Claims



1. In a process for producing a vinyl resinous laminated assembly containing a plurality of raised cellular areas on the surface thereof and a plurality of fibrous areas adjacent to said raised areas, useful as a covering, said process comprising the basic steps of:
1. incorporating a blowing agent into said resinous material;
2. forming said resinous material into a layer; the improvement comprising
3. applying to portions of said formed layer an adhesive composition containing an inhibitor for said blowing agent, which inhibitor is capable of penetrating into said resinous material and altering the decomposition temperature of said blowing agent;
4. and imbedding ornamental flock particles into said inhibitor-containing adhesive composition; and thereafter
5. heating the resulting assembly to effect the inhibition reaction and to decompose the blowing agent and fuse the composition so as to cause expansion at the sites of decomposition and the formation of contrasting thicknesses on the surface thereof, said flock particles being imbedded end-on in the non-expanded areas of said resinous assembly, said expansion being controlled substantially to match the height of said flock.

3,943,019
OPTICAL FILTER

Ulrich Krekeler, Osterwangen, and Peter Schneller, Munich, both of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

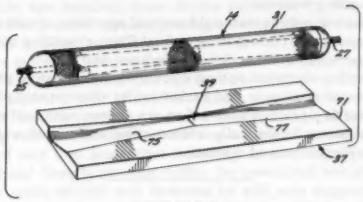
Division of Ser. No. 290,548, Sept. 20, 1972, abandoned. This application May 16, 1974, Ser. No. 470,563
Claims priority, application Germany, Sept. 22, 1971, 2147261
Int. Cl.² B29D 27/00; C09H 7/00
U.S. Cl. 156—99 2 Claims

1. A process for the production of optical wedge filters having a colored gelatin layer on a flexible support by casting a gelatin solution containing a dye on a flexible layer support and after subsequent hardening the gelatin layer and finally covering the gelatin layer with a flexible transparent coating bonded to the layer hardening wherein the improvement comprises cast gelatin solution having a dye for coloring the gelatin and having about 2% of hardener selected from the group consisting of mucochloric acid and chrome alum, partially hardening the layer containing this slight amount of hardener immediately after casting and then pressing the assembled layer support and cast gelatin layer in a wedge form to form the gelatin layer in a progressive varying thickness with the thinnest section one-fiftieth of the thickest section, the thickest section not being greater than 400 μm and completing the hardening of the formed filter layer in a formaldehyde atmosphere with a partial formaldehyde pressure of 5–250 mm Hg, to provide a filter layer capable of supporting an attachable covering foil independent of and unattached to the support.

3,943,020
FILAMENT WOUND BLADE AND METHOD FOR MANUFACTURING SAME

Larry J. Ashton, Long Beach; Dale P. Abildskov, San Pedro, and Samuel S. Yao, Carson, all of Calif., assignors to Fiber Science, Inc., Gardena, Calif.

Filed Dec. 5, 1974, Ser. No. 529,744
Int. Cl.² B64C 11/26; B65H 54/00
U.S. Cl. 156—156 9 Claims



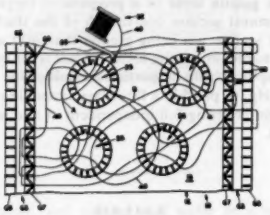
1. A method of manufacturing a filament wound blade including:
forming a spar belt by winding a plurality of unidirectional filaments in side-by-side relationship between a pair of spaced apart spools;
holding said spools spaced apart and in the selected orientation with respect to one another to maintain the spar filaments in tension and to cause said spar filaments to collectively assume the general desired configuration of said spar;
impregnating said filaments with a bonding agent;
forming a shell by constructing a flexible bondable bag over said spar belt;
winding side-by-side shell filaments in helical patterns extending about the periphery of said bag;
impregnating said shell filaments with a bonding agent;
placing said spar belt and shell in a mold defining the desired contour of said blade to cause said bonding agent on the blade to assume said desired contour;
curing said spar and shell filaments; and
heating said bondable bag to a sufficiently high temperature to melt said bag and bond said spar and shell filaments together.

3,943,021

OPTICAL DATA PROCESSING SYSTEM

Richard W. Lindsey, Rte. 3, Sandy Shore Drive, Lenoir City, Tenn. 37771

Division of Ser. No. 224,164, Feb. 7, 1972, Pat. No. 3,777,154. This application June 25, 1973, Ser. No. 373,087
Int. Cl.² G02B 5/14
U.S. Cl. 156—180 3 Claims



1. A method of fabricating an electrical-optical circuit board comprising the steps of:

affixing at least two socket guides each having a plurality of notches onto a base wherein each socket guide defines an optical circuit receiving aperture;

threading at least one optical fiber between said socket guides and within said notches in a predetermined manner;

coating the base with a potting material to encapsulate said at least one optical fiber between said guides with the potting material;

removing potting material from said apertures of said socket guides and cutting away optical fibers extending into said apertures to form optical windows; and

inserting electrical-optical circuit wafers including photoelectric devices in said socket guides wherein said photoelectric device of said wafers are aligned with said optical windows for optically intercoupling said circuit wafers in a predetermined manner.

3,943,022

METHOD OF FORMING SHARP BENDS IN PLASTIC FACED FLAT PANELS

Kenneth J. Susnjara, Santa Claus, Ind., assignor to Thermwood Corporation, Dale, Ind.

Filed July 22, 1974, Ser. No. 490,552
Int. Cl.² B31F 3/00
U.S. Cl. 156—211 6 Claims

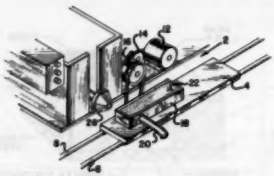
1. A method of forming a sharp bend in a laminated composite article consisting of a thin thermoplastic shell member bonded to a thick backing member comprising the steps of removing a V-shaped section of material from the backing member and from the rearmost portion of the thermoplastic shell member in the region where the bend is to be formed, applying a bead of hot melt adhesive in the bottom of the V-groove resulting from the removal of material, allowing the hot adhesive to soften the shell member to a point where it can be bent without cracking, and bending the composite to bring the sides of the V-groove toward and into contact with each other, thereby forcing the glue along the sides of the V-groove.

3,943,023

AUTOMATIC DECAL TRANSFER METHOD AND APPARATUS THEREFOR

Saul Weingrad, Hillsdale, N.J., assignor to Commercial Decal, Inc., Mount Vernon, N.Y.

Continuation of Ser. No. 145,629, May 21, 1971, abandoned. This application Mar. 4, 1974, Ser. No. 447,687
Int. Cl.² B44C 1/16; B32B 1/10; C09J 5/06, 7/02
U.S. Cl. 156—230 10 Claims



1. A method for decoration of objects with decalcomanias which comprises the steps of:

holding a decalcomania in fixed relation on a porous resilient surface by means of applying reduced pressure to the opposite side of said surface,

holding said object to be decorated in fixed rotational relation to said porous resilient surface, and

moving said decalcomania in transfer relation with said object to be decorated, so that the design layer of said decalcomania is transferred to said object while a web portion of said decalcomania remains on said porous resilient surface during the entire transfer of said design layer to said object.

7. An apparatus for the transfer of the design layer of decalcomanias to objects to be decorated therewith which comprises:

a porous and resilient surface for supporting said decalcomania;

means for holding said web portion of said decalcomania in position on said porous and resilient surface by applying reduced pressure therethrough during the entire transfer of said design layer of said decalcomania, said means for holding said decalcomania comprising a transversely movable table;

rotatable means for holding an object to be decorated in transfer relation to said decalcomania; and

means for moving said decalcomania in transfer relation to said object, so that said design layer of said decalcomania is progressively transferred to said object, while said web portion of said decalcomania remains on said porous and resilient surface.

3,943,024

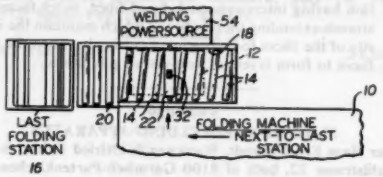
PAPER WELDING APPARATUS FOR BOOKBINDING MACHINERY

Bernard T. Sendor, 608 Blair Drive, Westbury, Long Island, N.Y. 11429, and Mortimer S. Sendor, 80-30 221st St., Queens Village, Long Island, N.Y. 11590

Continuation of Ser. No. 220,761, Jan. 26, 1972, abandoned. This application June 17, 1974, Ser. No. 480,244
Int. Cl.² B32B 19/02
U.S. Cl. 156—380 12 Claims

1. Apparatus for securing together the pages of a book that are made of paper sheets having surfaces throughout their entire areas incorporating a resin system that welds contacting edge portions of the sheets together when subjected to heat, said apparatus including assembling means that bring sheets of a book together in the sequence to one another in which they are intended to be bound, a welding station located along the path of travel of the sheets near a delivery end of the assembling means, conveyor means that move the sheets through the assembling means and welding station, clamping jaws at

the welding station along the path of travel of the sheets and in position to grip the assembled sheets adjacent to the rearward edge regions of the sheets, as said sheets come from the assembling means, means for supplying welding heat to the



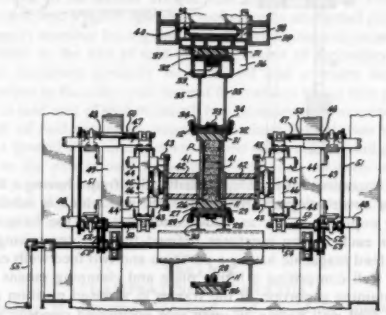
rearward edge regions of the sheets to weld them together while gripped in said jaws, and mechanism for releasing the clamping jaws at the end of the welding operation for passage of the welded sheets from the welding station.

3,943,025

LAMINATING TRAVELLING PRESS

George F. Russell, 8513 42nd W., Tacoma, Wash. 98466

Filed May 7, 1973, Ser. No. 357,960
Int. Cl.² B27D *3/04;* **B30B** *5/06*
U.S. Cl. 156—380 **6 Claims**



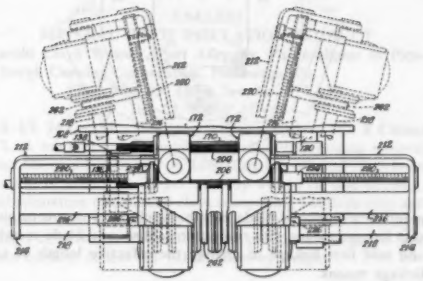
1. A laminating travelling press for laminating a pack of boards, comprising presser means including two endless tread belt stretches having substantially continuous planar parallel opposing faces for receiving a pack of boards therebetween and engaging the opposite sides of such board pack, respectively, each stretch being composed of a series of tread members in closely spaced relationship, each tread member including a metal plate having leading and trailing edges hingedly connected, respectively, to the adjacent edges of two adjacent metal plates, and each metal plate having a press block of hard plastic insulating material bonded thereto and forming a face engageable with a pack of boards, two backing means, one for each of said endless tread belt stretches and each having a stationary bearing pressure surface of hard, low-friction dielectric material against which said metal plate of said two endless tread belt stretches slidably bear and yieldable pressure means urging said backing means relatively toward each other, dielectric heating electrodes at opposite sides of and adjacent to the pack of boards, said electrodes being elongated lengthwise of said endless tread belt stretches, extending along the major portion of the length of said endless tread belt stretches, located between the planes of said parallel endless tread belt opposing faces and of a width substantially equal to the width of the pack of boards, the electrical leakage path between each electrode and said metal plates of said endless tread belt stretches being of a length at least sufficient to deter substantial leakage of radio-frequency energy from an electrode to said metal plates, and means for moving said endless tread belt stretches lengthwise synchronously relative to said pressure means for moving the pack of boards lengthwise while sliding said metal plates in pack-compacting pressing engagement with said hard, low-friction dielectric material stationary bearing pressure surface of said backing means.

3,943,026

TIRE BUILDING STITCHER ASSEMBLY

Edwin E. Mallory, Niles, Mich., assignor to National-Standard Company, Niles, Mich.

Filed July 12, 1974, Ser. No. 487,900
Int. Cl.² B29H *17/02*
U.S. Cl. 156—410 **15 Claims**



1. In tire building apparatus having main frame means, and rotatable tire building drum means supported by the main frame means and in turn supporting a formed tire carcass with partially applied tread cap and/or sidewall components, a stitcher assembly comprising: a pair of carrier units; means for supporting and rotating said carrier units relative to the main frame means; a pair of arm assemblies one associated with each of said carrier units; means for supporting and linearly moving said arm assemblies with respect to said carrier units; each of said arm assemblies including an arm support supported and linearly movable within the associated one of said carrier units, an arm unit mounted on said arm support and movable with respect thereto and carrying stitcher wheel means, and means for resiliently moving said arm unit; and said stitcher wheel means being in substantially abutting relationship at the midpoint of the tread at the start of the tread stitching operation.

3,943,027

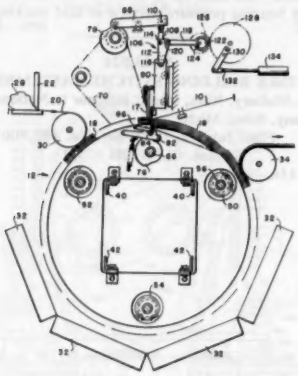
CARPET MACHINE

Charles A. Wethington, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Apr. 8, 1974, Ser. No. 458,769
Int. Cl.² D05C *15/04*
U.S. Cl. 156—435 **3 Claims**

1. Apparatus to produce a bonded pile fabric comprising: a rotor, means to rotate said rotor, a set of blade members slidably mounted in said rotor, a second blade member slidably mounted with respect to said rotor and operably associated with said blade members in said rotor, means to supply yarn between said set of blade members and said second blade member, means to move said second blade downwardly at a predetermined time to bend the yarn over one blade of said set of blades, means to slide upwardly the blade of said set of blades next adjacent to the blade over which the yarn is bent to form a loop in said yarn, means to supply an adhesive backed backing material into contact with said formed loop, means to adjust the amount of downward movement of said second blade, said means to move said second blade downwardly including a cam actuated lever arm, a first linkage

pivotally connected to said lever arm, and a linkage means pivotally connected to said first linkage and said second blade member, said means to adjust the amount of downward move-



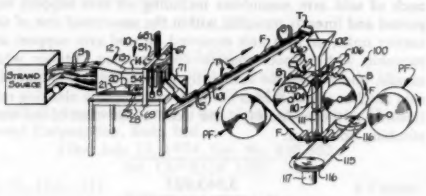
ment of said second blade member includes a means to pivot said linkage means with respect to said second blade member and said first linkage to change the effective length of said linkage means.

3,943,028

APPARATUS AND PROCESS FOR MANUFACTURING NON-WOVEN TEXTILE PILE

Donald MacKinnon Davis, 616 E. Brow St., Lookout Mountain, Tenn. 37350

Filed June 3, 1974, Ser. No. 475,925
Int. Cl.[2] D04H *11/08*
U.S. Cl. 156—435 **19 Claims**



1. In apparatus for manufacturing non-woven, textile, pile fabric from a plurality of pile-forming strands having thermoplastic characteristics; the combination of:

hollow strand extruder means for receiving therein parallel strands extending longitudinally therethrough and for shaping the strands into a continuous mass of a predetermined configuration for withdrawal from said extruder means;

a plurality of relatively thin, spaced-apart, successive, compartment means positioned generally in axial alignment with said extruder means and defining successive, spaced-apart, open-sided, interior areas of the same general configuration as the shaped mass of strands and collectively defining a longitudinally-extending passageway for receiving and holding the continuous mass of strands therein after withdrawal from said extruder means;

means cooperating with said extruder means and said compartment means for moving the continuous shaped mass of strands from said extruder means into said compartment means; and

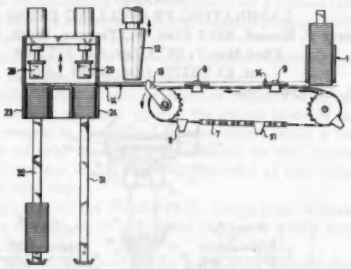
means mounted for progressive movement transversely of the strands through the spaces between and on each side of said compartment means for transversely melting, cutting and fusing the mass of strands in said compartment means into a plurality of individual, transversely-extending slices of the shaped predetermined configuration having interconnected, fused-fiber, outer faces with strands extending therebetween which maintain the integrity of the slices for subsequent cutting between the fused faces to form layers of non-woven pile fabric.

3,943,029

SLIDE FRAME-WELDING APPARATUS

Peter Hans Ernst Mundt, Wankweg 9; Otfried Urban, Achenfeldstrasse 22, both of 8100 Garmisch-Partenkirchen, and Arnold Neuhold, Esterbergstrasse 40, 8105 Farchant, all of Germany

Filed Sept. 21, 1973, Ser. No. 399,538
Claims priority, application Germany, Sept. 21, 1972, 2246624
Int. Cl.[2] B29C *27/02*; B32B *31/20*
U.S. Cl. 156—443 **4 Claims**



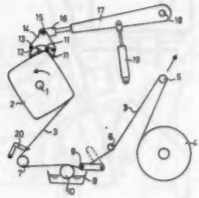
1. Apparatus for forming a plastic slide frame having a base and a cover integrally hinged thereto and which is substantially coplanar in the as-made condition, with the base and cover each having apertures defined therein, comprising: a dual feed magazine having a partition and two feed wells each feed well comprising a lifting plate and clamping means for maintaining a portion of the frames in a raised position and each feed well having an open side positioned opposite said partition and which feed wells are adapted to receive the bases of a plurality of said frames formed in stacks, said feed well open sides adapted to permit the hinged covers of said plurality of frames in the stacks to protrude horizontally from the magazines; welding means for welding the covers of said frames to their bases; a straight line conveyor disposed below and associated with each feed well, each conveyor being provided with

means for engaging the base of the lowermost frame in the stack and transporting the engaged frame with attached cover away from the associated feed well; a rectilinear guideway extending along each conveyor between said associated feed well and said welding means, said guideway comprising means for erecting the horizontal cover of each frame at right-angles to the base and means for folding the cover onto the base with said base and cover apertures in registry to form a folded frame; said conveyor being arranged to disengage said engaging means from said folded frame at a release location on said path; alignment means associated with each of said conveyors and located between said welding means and said conveyor release location for aligning the folded frames with respect to said welding means for a welding operation, and centering wells located adjacent said welding means; and means for inserting welded frames therein, centering means in said centering wells for engaging said welded frames.

3,943,030
APPARATUS FOR PRODUCING SUITCASE FRAMES

Harry Herbert Olsen, and Mogens Ivan Hjort, both of Korsor, Denmark, assignors to Danalet Kuffertfabrik A/S, Denmark

Filed July 11, 1974, Ser. No. 487,685
Claims priority, application Denmark, July 16, 1973, 3927/73; Spain, Feb. 19, 1974, 423410
Int. Cl.² B65H 3/12
U.S. Cl. 156—446 2 Claims

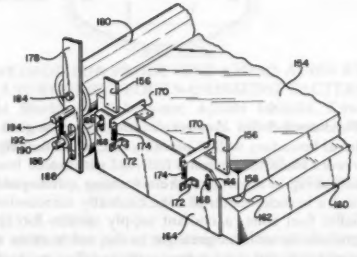


1. An apparatus for producing wound suitcase frames and comprising a mandrel having a substantially rectangular shape with rounded corner portions and journalled for rotation about a horizontal axis, means for carrying a feed roll of strip material to be wound around said mandrel by the rotation thereof, and a roller assembly including an elongated primary support member having one end pivotally mounted on an axis parallel to the axis of said mandrel, a pair of secondary support members pivotally mounted on said primary support member at the other end thereof for rotation about axes parallel to said axis of said mandrel, two pressure rolls mounted on each of said secondary support members for rotation about axes spaced from one another around said mandrel and parallel to the axis of said mandrel, and means resiliently urging said primary support member toward said mandrel to press each of said pressure rolls into contact with strip material being wound onto said mandrel.

3,943,031
LAMINATING APPARATUS

Theodore H. Krueger, Wayland, and David B. Spaulding, Carlisle, both of Mass., assignors to Seal Incorporated, Derby, Conn.

Filed May 14, 1973, Ser. No. 359,663
Int. Cl.² B30B 15/34; B32B 31/00
U.S. Cl. 156—583 14 Claims



1. Laminating apparatus comprising a chassis, a pair of pressure rolls supported by said chassis and mounted for rotation on their own axes, at least one of said rolls being movable toward and away from the other of said rolls, spring means resiliently biasing said rolls into pressure engagement with each other, a heating station comprising a platen and a work support member for guiding a multi-sheet workpiece to be laminated into the nip formed by said rolls; said platen being disposed above said work support member with said platen and work support member having confronting heat conductive surfaces that are in engagement with each other, means for securing said work support member against movement relative to said chassis, means mounting said platen for movement toward and away from said work support member so that said platen normally rests on said work support member of its own weight and is capable of floating when a workpiece to be laminated is inserted between them and positioned in the nip of said rolls, means for heating said platen and work support member to a selected temperature, and drive means for continually rotating at least one of said rolls to draw said workpiece from said heating station through said rolls so that the sheets of said workpiece are forced into face-to-face pressurized contact.

3,943,032
MINERAL WOOL INSULATION PRODUCT

Harold Lloyd Weaver, Port Allegany, Pa., assignor to Pittsburgh Corning Corporation, Pittsburgh, Pa.

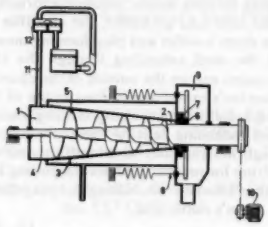
Filed May 23, 1974, Ser. No. 472,693
Int. Cl.² D21F 11/00
U.S. Cl. 162—152 8 Claims

1. A mineral wool insulation product comprising mineral wool fibers, a binder and an admixture of colloidal clays in an amount of about 10–25 per cent by weight of said product, said admixture of colloidal clays comprising kaolinite clay and bentonite clay, said mineral wool insulation product having a density of between 7 and 20 pounds per cubic foot and a free silica content of less tha 1.0 per cent by weight.

3,943,033
SCREW THICKENER

Lennart E. O. Wallen, Stockholm, Sweden, assignor to Lennart Wallen & Co AB, Stockholm, Sweden

Filed Apr. 5, 1974, Ser. No. 458,439
Claims priority, application Sweden, Apr. 5, 1973, 7304808
Int. Cl.² D21C 9/18
U.S. Cl. 162—232 5 Claims



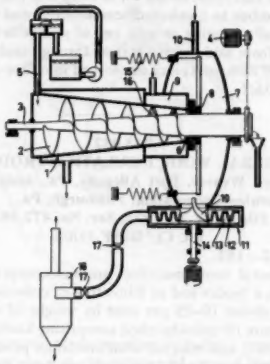
1. In a screw thickener for the dewatering of fiber suspensions having a starting concentration in the range of 1 to 10% and comprising a shaft rotatable in a screen drum provided with at least one flight mounted in helicoid form, the screen drum and the envelop of said at least one flight tapering towards the discharge end and the diameter of the shaft increasing conically toward the discharge end, said screw thickener also including means for feeding at one end of said screen drum and plug forming and discharge means at the other end, the improvement comprising means maintaining an internal hydrostatic overpressure of at least 10 kPa as measured at the highest interior point of the screen drum and means for pulling said plug forming means comprising a plurality of pulling means evenly distributed around the periphery of said plug forming means and externally of said screen drum, and said shaft at said discharge end passing through said plug forming means.

3,943,034

DEWATERING AND HOMOGENIZING APPARATUS

Lennart E. O. Wallen, Stockholm, Sweden, assignor to Lennart Wallen & Co AB, Stockholm, Sweden

Filed Apr. 5, 1974, Ser. No. 458,354
Claims priority, application Sweden, Apr. 5, 1973, 7304809
Int. Cl.² D21C 9/18
U.S. Cl. 162—232 5 Claims



1. An apparatus for dewatering and homogenizing a pulp suspension and comprising a screen drum having inlet and outlet ends and tapering from the inlet end to the outlet end, a rotative shaft extending through the drum and beyond both ends of the drum, means for enclosing the drum radially throughout its length while leaving its outlet end axially open around the shaft, plug-forming means surrounding the shaft at the drum's outlet end and movable towards and from the outlet end, the shaft having screw-flights of helicoid shape inside of the drum and radially tapering from the drum's inlet to its outlet end, for forcing pulp when fed to its inlet end against the plug-forming means, means for forming a chamber having a fluid inlet and an outlet, the chamber fluid-tightly enclosing the drum's outlet and plug-forming means, the adjacent end of the shaft extending through the chamber and having a journaled end on the outside of the chamber and free from the chamber's inside, and means inside of the chamber and extending radially from the plug-forming means and forming backward extending tension members extending backwardly through the chamber to its outside and externally of said screen drum for receiving backward-pulling force applied on the chamber's outside for biasing the plug-forming means towards the drum's outlet end.

3,943,035

BREAST BOX HAVING AN ADJUSTABLE LIP IN A PAPER MAKING MACHINE

Wolf Gunter Stotz, Ravensburg, and Siegfried Reutter, Gerbertshaus, both of Germany, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Apr. 15, 1974, Ser. No. 460,975
Claims priority, application Switzerland, Apr. 17, 1973, 5453/73
Int. Cl.² D21F 1/04
U.S. Cl. 162—272 6 Claims

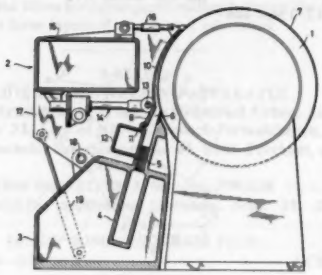
1. In combination with a paper-making machine having a permeable element for forming a paper web;

a casing;

a pulp-feed including a guide device on said casing and a nozzle duct communicating with said guide device and terminating at said permeable element to deliver pulp thereto;

an adjustably mounted lip laterally bounding said nozzle duct relative to said permeable element;

an adjusting mechanism connected to said lip for moving said lip relative to said permeable element to adjust the height of said nozzle duct; and



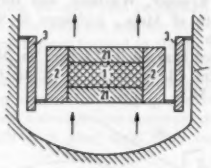
a support means supporting said adjusting mechanism and said lip thereon and forming a structural unit therewith, said structural unit being adjustably mounted on said casing for moving said lip away from said permeable element and said guide device to expose said nozzle duct and said guide device.

3,943,036

FAST BREEDER REACTOR

Albert Ziegler, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Continuation-in-part of Ser. No. 75,369, Sept. 25, 1970, abandoned. This application May 16, 1973, Ser. No. 360,903
Claims priority, application Germany, Sept. 27, 1969, 1948901
Int. Cl. G21c 15/02
U.S. Cl. 176—18 7 Claims



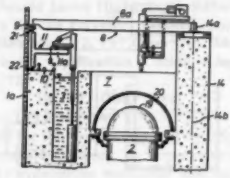
1. Fluid-cooled fast breeder reactor comprising an outer cylindrical boundary wall, a plurality of canless fuel elements and breeder material elements received within said boudnary wall and being in an array therein forming a fissionable fuel zone and a breeder material zone coaxially surrounding said fissionable fuel zone, a coolant supply system for applying fluid coolant at uniform pressure to the entire cross section within said cylindrical boundary wall, and flow guide devices extending substantially horizontally and disposed at different levels one above the other within said breeder material zone which coaxially surrounds said fissionable fuel zone, means for elastically securing the flow guide devices at alternate levels within said breeder material elements to said boundary wall, the flow guide devices at the levels intermediate said alternate levels being spaced by an annular gap from said boundary wall.

3,943,037

FUEL ELEMENT EXCHANGE SYSTEM

Heiner Siegert, Wiesbaden, and Ulrich Ristow, Neu-Isenburg, both of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany

Filed Dec. 18, 1973, Ser. No. 425,772
Claims priority, application Germany, Dec. 18, 1972, 2261882
Int. Cl.² G21C *19/20*
U.S. Cl. 176—30 7 Claims



1. A system for the wet exchange of fuel elements in a nuclear reactor housed in a round reactor building having a generally circularly extending vertical wall surrounding the nuclear reactor; the nuclear reactor being of the type having a safety pressure vessel containing nuclear fuel elements in use, a reactor pool situated above the pressure vessel, a fuel element storage pool of arcuate outline, a gate-controlled channel connecting the reactor pool with the storage pool, and an operating platform situated adjacent the pools; comprising in combination:

a. a support column disposed within and substantially centrally with respect to said reactor building;
b. a first fuel element exchange gantry including a bridge disposed above the level of said operating platform and having two opposite ends, one of said ends being supported on said column;
c. an arcuately extending rail held in said vertical wall above the level of said operating platform and supporting the other of said ends of said bridge;
d. a second fuel element exchange gantry having a cantilever bridge;
e. means for supporting said second gantry below said first gantry and providing for said second gantry a free, unobstructed passage under said first gantry; and
f. at least one fuel element box-stripping machine disposed at said storage pool immediately across from said channel within the operational range of said first and second gantries.

3,943,038

METHOD FOR PRODUCING AMINO ACIDS BY CULTURING HYDROGEN-OXIDIZING BACTERIA

Yasushi Morinaga, Yokohama; Ayaaki Ishizaki, Kawasaki, and Shin-ichiro Otsuka, Yokohama, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Aug. 13, 1974, Ser. No. 497,031
Claims priority, application Japan, Aug. 16, 1973, 48-91953
Int. Cl.² C12D *13/06*
U.S. Cl. 195—28 R 9 Claims

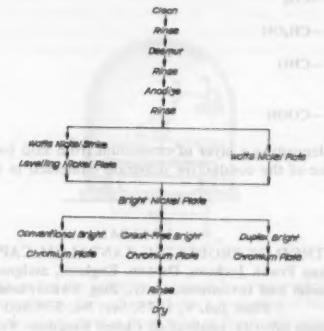
1. A method for producing amino acids which comprises culturing a microorganism selected from the group consisting of brevibacterium sp. FERM P-2234, mycobacterium sp. FERM P-2235, arthrobacter sp. FERM P-2638, alcaligenes eutrophus ATCC 17697, pseudomonas facilis ATCC 11228 and pseudomonas ruhlaudii ATCC 15749 in an aqueous culture medium containing at least a nitrogen source and inorganic salt and in the presence of oxygen, hydrogen and carbon dioxide, and recovering the resulting produced amino acids from the culture medium.

3,943,039

ANODIZING PRETREATMENT FOR NICKEL PLATING

Henry J. Wittrock, Pleasanton, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Oct. 8, 1974, Ser. No. 513,197
Int. Cl.² C25D *5/44*, *11/08*
U.S. Cl. 204—42 8 Claims



1. In the electrolytic plating of nickel onto an aluminum substrate having low levels of insoluble intermetallic particles wherein the aluminum substrate is first anodized in an acidic aqueous electrolyte containing only phosphoric acid as the acid species and then a layer of nickel is electrolytically plated onto the anodized substrate from an acidic aqueous solution containing at least one nickel compound, the improvement comprising controlling the anodizing procedure so that a predetermined voltage in the range between about 45 and 75 volts is reached within 30 seconds from the start of the anodizing procedure, causing a high initial current density not exceeding 120 amps/ft² which decays to a level between 15 and 50 amps/ft².

3,943,040

MICROCRACKED CHROMIUM FROM A BATH USING AN ORGANIC SULFUR COMPOUND

Karl Stuart Willson, Cleveland, Ohio, assignor to The Harshaw Chemical Company, Cleveland, Ohio

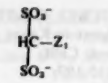
Filed Sept. 20, 1974, Ser. No. 507,842
Int. Cl.² C25D *3/10*
U.S. Cl. 204—51 10 Claims

1. The method of electroplating a microcracked layer of chromium onto a conductive substrate comprising electrolyzing an aqueous bath, said bath consisting of

a. A chromium compound for providing hexavalent chromium ions,
b. An effective amount of at least one catalyst selected from the group consisting of sulfate ions, simple fluoride ions, complex fluoride ions and mixtures thereof, and
c. Optionally H_3BO_3 in an amount between 5 grams per liter and saturation, and/or between about 0.003 and 0.02 grams/liter of Na_2SeO_4, to which has been added: 4 – 12 grams/liter of an organic sulfur compound, said compound selected from the group consisting of
1. A compound having the formula

$$Z_1—CH_2—S(O)_n—CH_2—Z_2$$

where n is 0, 1 or 2, and
2. A compound containing the anion



wherein Z_1 and Z_2 are organic radicals independently chosen from the group consisting of

$-CH_3$

$-CH_2OH$

$-CHO$

and

$-COOH$

and depositing a layer of chromium from said bath onto the surface of the conductive substrate immersed in said bath.

3,943,041

METHOD OF PRODUCING TANTALUM CAPACITORS

Norman Frank Jackson, Duston, England, assignor to Plessey Handel und Investments A.G., Zug, Switzerland

Filed Jan. 9, 1975, Ser. No. 539,803

Claims priority, application United Kingdom, Feb. 12, 1974, 06275/74

Int. Cl.² C25D *11/26*

U.S. Cl. 204—56 R **10 Claims**

1. A method of producing a tantalum capacitor which includes the steps of providing a tantalum anode and anodising the tantalum anode in an electrolyte which is maintained at a temperature of not greater than 25°C, the value of the anodising current density being selected so that heat dissipation is minimised and the electrolyte concentration is maintained.

3,943,042

ANODE FOR ELECTROLYTIC PROCESSES

Edward H. Cook, Jr., Lewiston, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 494,110, Aug. 2, 1974, Pat. No. 3,882,002. This application May 5, 1975, Ser. No. 574,478

Int. Cl.² C25B *1/26, 1/16, 11/08, 11/10*

U.S. Cl. 204—95 **9 Claims**

7. In a method of electrolyzing aqueous alkali metal chloride solutions in an electrolytic cell comprising an anode and a cathode wherein chlorine and an alkali metal hydroxide are formed, the improvement which comprises using as the anode, a composite structure comprising a valve metal substrate, a coating thereon of conductive tin oxide containing a doping amount of tungsten, and an outer coating on the surface of the conductive tin oxide, of at least one of a noble metal or noble metal oxide.

3,943,043

APPARATUS FOR OR SELECTIVE DISSOLUTION OR DETECTION OF PREDETERMINED METALS

Richard W. Billington, London, and Robin Drewett, Ascot, both of England, assignors to Wilkinson Sword Limited, England

Filed Oct. 9, 1973, Ser. No. 404,331

Claims priority, application United Kingdom, Oct. 19, 1972, 48167/72

Int. Cl.² C25F *5/00, 3/00*

U.S. Cl. 204—146 **14 Claims**

1. Apparatus for selective dissolution of a predetermined metal which is present with at least one other metal in a metal-metal combination as a first electrode in an electrolytic cell, comprising

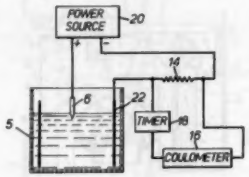
a predetermined electrolyte in the electrolytic cell,

one other electrode, only, mounted in the cell and made of material which is electrolytically inert in the electrolyte in use,

means connected to the electrodes and applying a predetermined potential difference of predetermined polarity between the two electrodes,

means connected to the electrodes for totalising the electrical energy flowing between them in response to the applied potential difference, and

control means for initiating and terminating such totalizing,



the pH of the electrolyte, the said potential difference, and the material of the said other electrode being selected to hold the first electrode at such potential relative to a standard calomel electrode as lies in those areas of the Pourbaix diagrams for the metals where the said predetermined metal is dissolved and the other metal remains passive,

the size of the area of the said other electrode being such that the electrode does not enter the limiting current regime in use, and

the said control means being adapted to confine the totalizing to a time period which is sufficient to allow substantially dissolution of the predetermined metal.

3,943,044

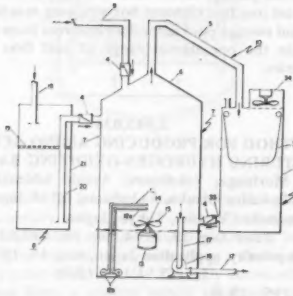
METHOD FOR TREATING SEWAGE WATER

Robert W. Fenn, III, Painesville, and Kevin J. O'Leary, Cleveland Heights, both of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Division of Ser. No. 178,291, Sept. 15, 1971, abandoned. This application Nov. 30, 1973, Ser. No. 420,650

Int. Cl.² C02B *1/82*; B01D *5/00*

U.S. Cl. 204—149 **2 Claims**



1. The process for treating sewage water which comprises:

A. providing a sewage-containing alkali metal halide solution to an upwardly tapered cell chamber ending in a solids discharge outlet and having submerged dimensionally stable electrodes disposed therein;

B. agitating and disintegrating solids contained in said solution;

C. passing a direct electrolyzing current between opposed dimensionally stable anodes and cathodes in said solu-

tion, whereby said solution and solids are disinfected and said solids float to the top of the chamber;

D. removing solids and entrained solution through the solids discharge outlet; and

E. discharging treated solution from said chamber.

3,943,045

IRRADIATION OF HYDROPHILIC AND HYDROPHOBIC MONOMERS TO PRODUCE HYDROPHILIC COPOLYMERS

Philip William Cordrey, London; John David Frankland, Romford, and Donald James Highgate, Guildford, all of England, assignors to Special Polymers Limited, London, England

Filed Mar. 12, 1973, Ser. No. 340,010

Claims priority, application United Kingdom, Mar. 13, 1972, 11627/72

Int. Cl.² C08F *2/48, 2/54*

U.S. Cl. 204—159.22 **15 Claims**

1. A method for the production of a hydrophilic copolymer, which comprises subjecting to copolymerization an initial mixture of (a) hydrophilic monomer selected from the group consisting of methacrylic acid, acrylic acid, N-vinyl pyrrolidones, vinyl pyridines, hydroxy alkyl methacrylates and mixtures thereof, and (b) hydrophobic monomer selected from the group consisting of alkyl acrylates, alkyl methacrylates, styrene and diethyleneglycol bis(allyl carbonate) and, as the only monomers in the polymerization system, said monomers being mixed in a molar ratio of *a/b* in the range of 10/1 to ½, in an environment free of chemical polymerization initiator and any residue thereof, by subjecting the initial mixture to electromagnetic radiation in the ultraviolet-gamma ray range using a radiation dosage of from 2 to 5 megarads administered over a time period of from one to 48 hours, to give a degree of polymerization of at least 95%.

3,943,046

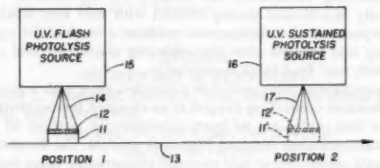
UV CURING PROCESS EMPLOYING FLASH PHOTOLYSIS

Miksa De Sorga, Olmsted, and Vincent D. McGinniss, Middleburgh Heights, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Division of Ser. No. 373,374, June 25, 1973, Pat. No. 3,875,067. This application Oct. 17, 1974, Ser. No. 515,511

Int. Cl.² C08F *2/46, 4/00*

U.S. Cl. 204—159.23 **2 Claims**



1. In a process for ultraviolet curing of an ultraviolet photopolymerizable paint film disposed within an air inhibiting atmosphere, said paint film being irradiated with ultraviolet energy, the improvement comprising:

irradiating said paint film with a pulsed photolysis light emitting flashing ultraviolet light to superficially cure the paint film and form a tack-free surface on the paint film; and

irradiating said paint film with a sustained photolysis light emitting substantially continuous ultraviolet light to profoundly cure said paint film and completely photopolymerize the paint film other than the film surface.

3,943,047

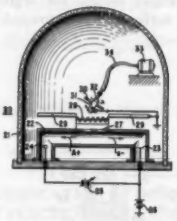
SELECTIVE REMOVAL OF MATERIAL BY SPUTTER ETCHING

Paul David Cruzan, Allentown, Pa., and Thomas Charles Tisone, Schaumburg, Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 10, 1974, Ser. No. 468,813

Int. Cl.² C23C *15/00*

U.S. Cl. 204—192 **2 Claims**



1. A method for the selective removal by sputter etching of material from the surface of a workpiece including at least one layer of material dissimilar from that of the workpiece comprising placing the workpiece in a low pressure ambient of a noble gas, ionizing the noble gas to form a plasma, providing an electrode for accelerating the ions of the gas plasma toward the surface of the workpiece thereby forming a stream of ions impinging on said surface of the workpiece, producing relative change in the angular relation between the surface of the workpiece and the axis of the stream of ions, by causing the plane of the surface of the workpiece to simultaneously rotate in and traverse an arc in oscillatory fashion across the stream of ions, and providing a fieldfree region adjoining the surface of said workpiece whereby the ions in said stream travel in substantially straight paths to impinge on said surface.

2. The method in accordance with claim 1 in which said workpiece is a semiconductor wafer.

3,943,048

POWDER ANODE

Gordon L. Fisher, Mahwah, N.J., and Calvin R. Cupp, Suffern, N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Feb. 26, 1973, Ser. No. 335,711

Int. Cl.² C25B *11/02;* **C25D** *17/12*

U.S. Cl. 204—290 R **14 Claims**

1. A consumable electroplating anode comprising a cold compacted mass of powder of electrodepositable metal selected from the group consisting of nickel, cobalt, iron, copper, chromium, platinum, palladium, cadmium, zinc, tin and alloys and mixtures thereof having

a. at least one additive from the group consisting of electrode activators and electroplating bath additives dispersed therethrough

b. a continuous metallic path therethrough and

c. a density of at least 70% of theoretical.

3,943,049

APPARATUS FOR SEPARATING AGGLOMERATED PARTICLES WITHIN SUSPENSIONS

Edwin Zucker, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 108,213, Jan. 20, 1971, Pat. No. 3,833,493, which is a division of Ser. No. 764,721, Oct. 3, 1968, Pat. No. 3,595,722. This application Apr. 17, 1974, Ser. No. 461,682

Int. Cl.² C25D *13/00*

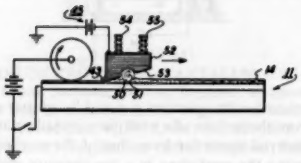
U.S. Cl. 204—300 R **4 Claims**

1. Apparatus for breaking inter-particle bonds in order to

separate agglomerated particles within suspensions comprising in combination:

a. an electrode having a surface capable of supporting a layer of suspension thereon;

b. prestressing means having a lower surface angularly displaced from said electrode surface and adapted to be in contact with a layer of suspension carried on said electrode surface, said lower surface forming a constricting channel with said electrode surface so that any suspension passing therebetween is subjected to external stresses, wherein said prestressing means further comprises compressive means for urging said prestressing means lower surface tiltably toward said electrode surface thereby applying a dynamic compressive stress and shear stress to suspension carried on said electrode surface;



c. means for moving said prestressing means lower surface relative to said electrode surface; and

d. said prestressing means further comprising electrical biasing means for creating an electrical bias field between said prestressing means lower surface and said electrode surface.

3. The apparatus according to claim 1 wherein said prestressing means further comprises a roller mounted for rotation in said lower surface and adapted to be in intimate contact with suspension carried on said electrode surface.

3,943,050

SERIAL REFORMING WITH ZIRCONIUM-PROMOTED CATALYSTS

Ralph J. Bertolacini, 859 W. Porter Ave., Chesterton, Ind. 46304, and Dae K. Kim, 347 Custer Ave., Evanston, Ill. 60204

Filed July 26, 1973, Ser. No. 382,837
Int. Cl.[2] C10G *35/08, 39/00*
U.S. Cl. 208—65 **6 Claims**

1. A process for reforming a petroleum hydrocarbon stream, which process comprises contacting said hydrocarbon stream in a first reforming zone under reforming conditions and in the presence of hydrogen with a first reforming catalyst that does not contain zirconium to produce a first reformate and subsequently contacting said first reformate in a second reforming zone under reforming conditions and in the presence of hydrogen with a second reforming catalyst comprising a Group-VIII-noble-metal hydrogenation component and a small amount of zirconium on a solid catalytic support comprising a porous refractory inorganic oxide, said Group-VIII-noble-metal hydrogenation component being present in an amount of about 0.05 wt. % to about 2 wt. % and said zirconium being present in an amount of about 0.05 wt. % to about 5 wt. %, each being calculated as the element and based upon the total weight of said second reforming catalyst.

3,943,051

HYDROCARBON CONVERSION PROCESSES UTILIZING REJUVENATED ZEOLITE CATALYSTS

John W. Ward, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed May 17, 1974, Ser. No. 470,867
Int. Cl.[2] C10G *13/02;* **B01J** *29/28*
U.S. Cl. 208—111 **14 Claims**

1. A hydrocarbon conversion process which comprises subjecting a hydrocarbon feedstock plus added hydrogen to contact at elevated conversion temperatures with a catalyst comprising a non-zeolitic Group VIII noble metal supported on a siliceous zeolite carrier which also contains zeolitic mono- and/or divalent metal ions, said catalyst having been previously subjected to thermal and/or hydrothermal conditions resulting in a maldistribution of said Group VIII noble metal on said carrier with resultant reduction in hydrogenation activity and/or in a deleterious migration of said zeolitic metal cations resulting in a reduction in cracking activity, and which has thereafter been rejuvenated to substantially its original fresh activity by a process which comprises:

A. contacting said catalyst in an oxidized or sulfided state with a volumetric excess of a reagent consisting essentially of a 0.1 – 30 weight-percent aqueous ammonium hydroxide solution, and correlating the contacting time with the temperature and reagent strength so as to effect a substantial improvement in hydrogenation activity of said catalyst while retaining therein at least about 90 percent of said Group VIII noble metal;

B. subjecting the treated catalyst from step (A) to contact with an extractive proportion of an aqueous ammonium salt solution at a pH below about 8 to exchange out a substantial portion of said zeolitic metal cations:

C. separating the catalyst from the resulting ammonium salt extract of zeolitic metal cations; and

D. drying and calcining the separated catalyst.

3,943,052

REGENERATION PROCEDURE

Walter S. Kmak, Scotch Plains, and David J. C. Yates, Westfield, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Aug. 16, 1973, Ser. No. 388,743
Int. Cl.[2] C10G *35/08;* **B01J** *23/96*
U.S. Cl. 208—140 **6 Claims**

1. In a process for the catalytic reforming of hydrocarbon wherein a hydrocarbon feed stock is contacted with a catalyst comprising from about 0.01 to about 3.0 wt. % of an iridium component contained on a refractory inorganic oxide support at reforming conditions, the catalyst having been at least partially deactivated during contact with said feed stock by the deposition of carbonaceous residues, a method for regenerating said catalyst after discontinuing contact of said catalyst with said feed stock comprising:

1. contacting said catalyst in a reaction zone with a gaseous mixture containing oxygen at an elevated temperature for a time sufficient to burn a substantial portion of said carbonaceous residues from said catalyst, the duration of said contacting at said elevated temperature being insufficient to convert more than about 70 wt. % of the iridium on said catalyst to agglomerates having crystallite sizes greater than about 50A;

2. contacting said treated catalyst in said reaction zone with an elemental halogen-containing gas at a temperature of less than about 850° F, thereby inhibiting the further agglomeration of non-agglomerated iridium on the catalyst;

3. contacting said treated catalyst in said reaction zone with a hydrogen-containing gas at an elevated temperature for a time sufficient to convert a substantial portion of said iridium to its metallic form; and

4. contacting said treated catalyst having a substantial portion of the iridium contained thereon in the metallic form

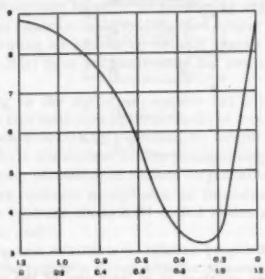
in said reaction zone with an elemental halogen-containing gas at a temperature of at least about 850° F. for a time sufficient to redisperse at least a portion of the iridium on the catalyst, wherein said steps (2) and (3) are effected prior to contact with a substantially halogen-free, oxygen-containing gas at a temperature sufficient to agglomerate further the iridium on said catalyst.

3,943,053

SELECTIVE HYDROGENATION OF AROMATICS AND OLEFINS IN HYDROCARBON FRACTIONS

Stephen M. Kovach, and George D. Wilson, both of Ashland, Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Oct. 4, 1974, Ser. No. 511,985
Int. Cl.² C10G *23/04*
U.S. Cl. 208—143 **12 Claims**



1. A method for hydrogenating a hydrocarbon fraction boiling between about 200° and about 700°F. and containing aromatic and olefinic components, comprising contacting said hydrocarbon fraction with hydrogen gas in the presence of a catalyst under conditions sufficient to cause hydrogenation of at least a portion of the aromatics and olefinics contained in said hydrocarbon fraction, said catalyst comprising about 0.2 to about 1 percent by weight each of platinum and palladium in a mole ratio of platinum to palladium of between about 1 to 2 and about 1 to 6 and prepared by:

a. contacting an inert gamma alumina carrier with an aqueous acidic solution containing both chloroplatinic acid and palladium (ous) chloride in solution;
b. drying the resultant mixture;
c. calcining the dried mixture in an inert atmosphere at a temperature between about 842° and about 1,022°F; and
d. reducing said dried mixture;

3,943,054

SEGMENTED SCREEN BODY

Gordon L. Simonson, Frederic, Wis., assignor to Durex Products, Inc., Luck, Wis.

Filed Dec. 19, 1974, Ser. No. 534,585
Int. Cl.² B07B *1/46*
U.S. Cl. 209—392 **6 Claims**

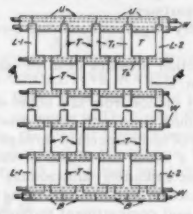
1. A segmented, elastic screen body having in combination:

a muliplicity of discrete, complemental, elastomer units, having stem-bar portions extending in the direction of flow of the fragmented material to be sifted and having also terminal, integral transverse-bar portions extending perpendicularly to one end of each stem-bar portion,

said transverse-bar portions having wire-embedding bores extending longitudinally therethrough, said stem-bar portions having transverse wire-embedding bores through the second end thereof,

said units being arranged and disposed in alternately, longitudinally staggered relation with bores of said transverse-bar portions being aligned transversely of said body with the transverse bores of said adjacent stem-bar portions,

and a plurality of reinforcing and interconnecting wires extending transversely in spaced relation across said body



and each passing through an aligned series of bores of said units.

3,943,055

PROCESS FOR PURIFICATION OF INDUSTRIAL WASTE WATERS FROM PERCHLORATES AND CHLORATES

Vladimir Nikolaevich Korenkov, Samarkandsky bulvar, 32, korpus 1, kv. 51, Moscow; Vitaly Ivanovich Romanenko, Nekouzsky raion, p/o Borok, 36, kv. 21, Yaroslavskaya oblast; Sergei Ivanovich Kuznetsov, Volkhovsky pereulok, 21, kv. 1, and Jury Viktorovich Voronov, Yaroslavskoe shosse, 4, korpus 3, kv. 229, both of Moscow, all of U.S.S.R.

Filed July 3, 1974, Ser. No. 485,371
Int. Cl.² C02C *5/10*
U.S. Cl. 210—2 **3 Claims**

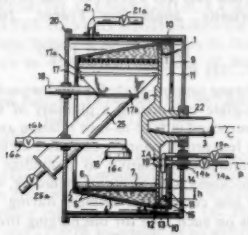
1. A process for the purification of industrial waste waters containing perchlorates and chlorates which comprises contacting such waste waters under anaerobic conditions with a strain of the microorganism *Vibrio dechloraticans Cuznesove* B-1168, and maintaining said waste waters in contact with said microorganism under anaerobic conditions until said perchlorates and chlorates in said waste waters have been reduced.

3,943,056

METHOD OF OPERATING A CENTRIFUGAL FILTER AND A FILTER CENTRIFUGE OPERATING ACCORDING TO THIS METHOD

Gunther Hultsch; Kurt Zeppenfeld; Peter Niedner, and Peter Ostermeyer, all of Munich, Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Germany

Filed Dec. 10, 1973, Ser. No. 423,579
Claims priority, application Germany, Dec. 11, 1972, 2260461; June 19, 1973, 2331202
Int. Cl.² B01D *33/02*
U.S. Cl. 210—78 **22 Claims**



1. A method of oeprating a filter centrifuge comprising a centrifuge drum rotatable about a horizontal axis and formed with a filter medium upon which a filter cake is adapted to form, said drum being surrounded by a liquid-collecting compartment having at least one outlet, said method comprising the steps of:

rotating said drum about said horizontal axis at a rate sufficient to induce passage of a liquid phase of a suspension outwardly through said filter medium into said liquid-collecting compartment;

preventing entry of gas into said liquid-collecting compartment;

applying a suction pressure head to said liquid-collecting compartnent; and

pumping air by suction from said liquid-collecting compartment and filling same with liquid prior to passage of the liquid phase of said suspension through said filter medium to establish a liquid continuum in said liquid-collecting compartment extending substantially to said filter medium, said suction pressure head being formed by siphone draining of said compartment through an outlet radially outwardly of said filter medium with respect to said axis, the liquid in said compartment blocking entry of air.

8. A filter centrifuge comprising:

a housing;

a drum rotatable in said housing and formed with a support for a filter medium centered on a horizontal axis of rotation of the drum and adapted to accumulate a filter cake upon introduction of a suspension of solids in a liquid phase into said drum;

first means forming a liquid-collecting compartment outwardly of said filter medium and provided with at least one outlet radially outwardly of said filter medium;

second means for preventing entry of gas into said liquid-collecting compartment except for entry through said filter medium; and

third means for inducing a suction pressure head at said filter medium in said liquid-collecting compartment, said second means being a siphon-like arrangement consisting of a liquid-containing part of said liquid-collecting compartment, a liquid-containing section of a further compartment, said section having at least one inlet radially outwardly of said filter medium, said inlet communicating with said outlet, and means for creating and maintaining in said further compartment a certain liquid level at a location radially inwardly of said inlet, the liquids in both of said compartments forming a liquid continuum, said further compartment being annular and being carried by said drum, said means for creating and maintaining said certain liquid level including an annular weir lying radially inwardly of said inlet.

3,943,057

MEMBRANE SUPPORT-PLATES AND FLUID SEPARATING APPARATUS IN WHICH THEY ARE PRESENT

Bruno Jamet, and Jean Roget, both of Lyon, France, assignors to Rhone-Poulenc, S.A., Paris, France

Filed July 10, 1974, Ser. No. 487,024

Claims priority, application France, July 11, 1973, 73.25451

Int. Cl.² B01D *31/00*

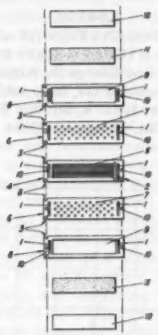
U.S. Cl. 210—321 R **8 Claims**

1. A membrane support-plate for fluid separating apparatus, said support-plate comprising a plurality of rectangular flat elements superposed in face-to-face relation and joined to one another in a leakproof manner, each flat element being substantially symmetrical relative to a median plane passing through its thickness, said elements including, in combination:

a. at least one central flat element having means defining channels on each face for discharging the permeate;

b. at least one intermediate flat element on each face of said central element, said intermediate elements each having holes opening into said permeate discharging means of the central element;

c. at least one outer element on the face of each intermediate element remote from said central element, and means defining a central orifice extending through the thickness of each said outer element to provide a cell forming recess on each face of said support plate over which a membrane may be placed;



and at least one aperture at at least one of the ends of the rectangular plate, extending through each said flat element, the apertures in the various elements being superposed, for the passage of fluid to be treated, said at least one aperture extending through the entire thickness of the support-plate.

3,943,058

REUSABLE COFFEE FILTER

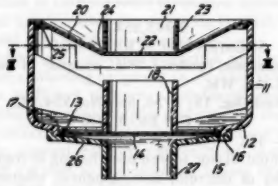
Alfred Wurm, Munich, Germany, assignor to Interelectric Aktiengesellschaft, Sachseln, Ow, Switzerland

Filed Nov. 25, 1974, Ser. No. 526,781

Claims priority, application Germany, Nov. 28, 1973, 2359348

Int. Cl.² B01D *27/08*

U.S. Cl. 210—456 **3 Claims**



1. A filtering device for extraction of coffee by means of hot water, comprising a vessel for accommodating a quantity of water, said vessel having a relatively wide opening at the bottom thereof, a permanent filter disk closing said opening, a cylindrical separating receptacle of relatively smaller diameter than said disk affixed centrally thereto, and a water distribution cover over said vessel, said cover having a water passage opening arranged above said separating receptacle, said opening not exceeding the diameter of said receptacle.

3,943,059

PROCESS OF DISPLACING OIL IN SUBTERRANEAN RESERVOIR EMPLOYING AQUEOUS SURFACTANT SYSTEMS

Ying C. Chiu, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 448,326, March 5, 1974, Pat. No. 3,892,668, which is a division of Ser. No. 351,738, April 16, 1973, Pat. No. 3,823,774, which is a continuation-in-part of Ser. Nos. 235,039, March 15, 1972, abandoned, and Ser. No. 235,088, March 15, 1972, abandoned. This application July 17, 1974, Ser. No. 489,307

The portion of the term of this patent subsequent to July 16, 1991, has been disclaimed.

Int. Cl.² E21B *43/20*

U.S. Cl. 252—8.55 D 3 Claims

1. In a process in which oil within a subterranean reservoir that contains an aqueous solution of multivalent cations is displaced from one location to another by injecting into the reservoir an aqueous anionic surfactant system which is capable of providing an interfacial tension against the oil of less than about 0.01 dyne per centimeter, the improvement which comprises:

dissolving in the surfactant system (a) a sodium salt of amino tris(methylphosphonic acid) in a concentration of from about 0.001 to 1 percent by weight of the system, and (b) a multivalent cation-precipitating compound of the group consisting of sodium or potassium salts of carbonates, sulfates, phosphates, or fluorides, in a concentration of from about 0.01 to 0.1 moles per liter of the system; and

dissolving said reactants in relative proportions such that, when the system is mixed with the aqueous solution in the reservoir, multivalent cations are reacted with a crystalline-precipitate-forming material to form a substantially colloidal suspension of crystal-growth-inhibited crystals having average diameters that are maintained at less than about 1 micron.

3,943,060

FRICTION REDUCING

Fred David Martin, McMurray, and Jerry Emile Boothe, Pittsburgh, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed July 26, 1974, Ser. No. 492,092

Int. Cl.² F17D *1/16;* E21B *43/26*

U.S. Cl. 252—8.55 R 4 Claims

1. A method for reducing the friction loss of aqueous fluids flowing through a conduit comprising maintaining in the aqueous fluid an effective amount of a polymer of dimethylaminomethyl acrylamide having a molecular weight of at least 100,000.

3,943,061

USE OF AN IRON/SILICON/PHOSPHORUS-ALLOY IN SEPARATION OF MINERALS

Johann Cziska, Erftstadt Lechenich; George Strauss, Hurth-Hermulheim; Wilhelm Portz, Erftstadt Kierdorf; Klaus Komorniczyk, Turnich-Balkhausen, and Joachim Kandler, Erftstadt Lechenich, all of Germany, assignors to Hoechst Aktiengesellschaft, Knapsack near Cologne, Germany

Filed May 4, 1973, Ser. No. 357,332

Claims priority, application Germany, May 9, 1972, 2222657

Int. Cl.² B29F *1/00;* C09K *3/00;* B03B *5/30;* B03D *1/00*

U.S. Cl. 252—60 6 Claims

1. Heavy pulp composition consisting essentially of water and a water-suspended metal powder consisting of particles with a size substantially between 0.001 and 0.4 mm for the heavy media separation of minerals, wherein the said metal powder is a pulverulent alloy having a density between 6.3 and 7.2 g/cc and consisting essentially of between 8 and 25 weight % of silicon, between 0.3 and 2.5 weight % of phosphorus and between 0.02 and 2 weight % of carbon, the balance being substantially iron, and the pulp density ranging between 2.0 and 3.9 g/cc.

3,943,062

CRYOLITE PROCESS FOR THE SOLIDIFICATION OF RADIOACTIVE WASTES

Joseph A. Wielang, Idaho Falls, Idaho, and Larry L. Taylor, Fort Belvoir, Va., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed May 13, 1974, Ser. No. 469,736

Int. Cl.² G21F *9/16*

U.S. Cl. 252—301.1 W 6 Claims

1. In the method of solidifying liquid radioactive wastes for long-term storage as a solid by calcining said liquid radioactive wastes in a fluidized-bed calciner wherein said liquid radioactive wastes contain significant quantities of sodium or sodium compounds, the improvement therein comprising: adding aluminum and a fluoride to said wastes in a form which will yield aluminum and fluoride ions and in an amount so as to produce cryolite during said calcination of said sodium-containing wastes and scrubbing the off-gas of said calciner with a solution to which aluminum has been added.

3,943,063

PREPARATION OF MICROCAPSULES

Masataka Morishita; Yoshihito Inaba; Mitsuru Fukushima; Sadami Kobari; Akiho Nagata, and Jinnosuke Abe, all of Shizuoka, Japan, assignors to Toyo Jozo Company, Ltd., Japan

Filed Jan. 2, 1973, Ser. No. 320,180

Claims priority, application Japan, Dec. 30, 1971, 47-2451

Int. Cl.² B01J *13/02*

U.S. Cl. 252—316 18 Claims

1. A process for preparing microcapsules comprising:

dispersing or dissolving a core substance in a film forming polymer solution to prepare a dispersion or a solution thereof,

emulsifying in fine droplets said dispersion or solution in a vehicle which is poorly miscible with the solvent of said polymer solution and which does not dissolve the polymer to prepare an emulsion, and adding to the emulsion a non-solvent for the polymer, wherein the non-solvent is miscible with the solvent, poorly miscible with the vehicle, and does not dissolve the polymer, whereby the solvent is removed by being absorbed by non-solvent emulsion droplets to precipitate the polymer film around the core substance.

3,943,064

HIGH STRENGTH ALUMINA-SILICA CATALYST SUBSTRATES HAVING HIGH SURFACE AREA

Marlyn D. Ballain, Belleville, Ill., and Leroy D. Hart, St. Louis, Mo., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed July 11, 1974, Ser. No. 487,643

Int. Cl.² B01J *29/06*

U.S. Cl. 252—455 R 8 Claims

1. An alumina-silica catalyst support characterized by a high relative surface area, a minimum compressive strength of 6.9 mPa and an abrasive resistance under 5% weight loss, said support comprising initially a mixture of 10–28% by weight colloidal silica and 72–90% by weight of an activated alumina made by exposure to a temperature of at least 400° C for a period not exceeding 4 minutes and which mixture has been subsequently rehydrated and then fired at a temperature of not less than about 600° C nor more than about 1400° C.

5. The support of claim 1 wherein said mixture is extruded into a thin wall object and rehydrated in the presence of moisture at a temperature of from 50°–90° C.

3,943,065

NON-COLLOIDAL POLYAMIC ACID ELECTRODEPOSITION COMPOSITIONS

David C. Phillips, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 245,397, April 19, 1972, abandoned. This application Oct. 12, 1973, Ser. No. 405,941

Int. Cl.² H01B *1/00*

U.S. Cl. 252—500 16 Claims

1. A method of making a resinous electrodeposition composition comprising the steps of:

A. providing a resinous salt comprising the reaction product of a polyamic acid and an organic nitrogen containing base selected from the group consisting of imidazoles and tertiary amines in a non-aqueous, organic, aprotic solvent for the salt,

B. adding to the salt in solution, a non-aqueous, organic, non-electrolizable, non-solvent for the salt in an amount effective to provide an essentially saturated solution containing the resinous salt, said solution being electrically conducting.

3,943,066

PREPARATION OF COMPOSITION FOR MAKING HYDROCARBON AND FATS INTO BIODEGRADABLE EMULSIONS

Pierre Fusey, Paris, France, assignor to Banque Pour L'Expansion Industrielle "Banexi", Paris, France

Filed May 10, 1974, Ser. No. 468,883

Claims priority, application France, May 22, 1973, 73.18559

Int. Cl.² C11D *9/02, 9/34;* B01F *17/16, 17/00*

U.S. Cl. 252—356 6 Claims

1. A process for the preparation of a composition for forming hydrocarbons or fats into a biodegradable emulsion comprises admixing more than one mole of a carboxylic acid with a mole of a primary or secondary aliphatic amine or primary or secondary aliphatic amino-alcohol, neutralizing the mixture by the addition of ammonia to bring the pH to about 7, and finally adding to 22.5 to 40 parts by weight of the neutralized mixture 2.5 to 5 parts by weight of a phospho-aminolipid and 55 to 75 parts by weight of a benzenic fraction-free petroleum solvent.

3,943,067

PROCESS FOR MANUFACTURING HYDROGENATION CATALYSTS

Trinh Dinh Chan, Rueil-Malmaison; Germain Martino, Poissy; Lucien Sajus, Croissy-sur-Seine, and Claude Roux-Guerraz, Paris, all of France, assignors to Institut Francais du Petrole, Paris, France

Continuation-in-part of Ser. No. 359,595, May 11, 1973, abandoned. This application Apr. 17, 1974, Ser. No. 461,659

Claims priority, application France, May 15, 1972, 72.17357

Int. Cl.² B01J *31/04, 31/12, 31/14, 27/08*

U.S. Cl. 252—430 7 Claims

1. In a process for manufacturing a catalyst comprising the following steps:

a. preparation of a homogeneous catalyst solution by admixing, at a temperature higher than 100°C, in a solvent, a compound of a metal (A) selected from the group consisting of those having atomic numbers of 22 to 28, 40 to 46, and 72 to 78 with a metallic or organometallic reducing agent, the metal (B) of the reducing agent being selected from the group consisting of metals of groups Ia, IIa, IIb, and IIIb; and

b. impregnation of a solid carrier with said solution, wherein the improvement comprises conducting said impregnation at a temperature of at least about 160°C.

3,943,068

NICKEL-PHOSPHORUS OXIDATIVE DEHYDROGENATION CATALYST

Dennis L. Ripley, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 6, 1971, Ser. No. 140,963

Int. Cl.² B01J *27/18;* C07C *5/48*

U.S. Cl. 252—437 4 Claims

1. A catalyst composition for effecting the dehydrogenation of a dehydrogenatable hydrocarbon feedstock consisting essentially of nickel, phosphorus, a Group IA metal and oxygen, wherein the amount of nickel is in the range of 48 to 75 weight percent, the amount of phosphorus is in the range of 0.1 to 16.8 weight percent, the amount of Group IA metal is in the range of about 0.1 to 10 weight percent and the amount of oxygen is sufficient to satisfy the valence requirements of all elements therein present; wherein the amount of phosphorus is less than that required for stoichiometric nickel phosphate; and wherein none of said materials are deleterious to dehydrogenation effects.

3,943,069

PROCESS FOR THE PRODUCTION OF SILVER-BASED CATALYSTS SUITABLE FOR THE PRODUCTION OF ETHYLENE OXIDE

Giambattista Antonelli, Brugherio (Milan); Natale Ferlazzo, and Giancarlo Aglietti, both of Milan, all of Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed Nov. 28, 1973, Ser. No. 419,834

Claims priority, application Italy, Nov. 30, 1972, 32272/72

Int. Cl.² B01J *27/20*

U.S. Cl. 252—443 19 Claims

1. A process for the preparation of silver-based catalysts suitable for the production of ethylene oxide, which comprises impregnating a granular support with a decomposable silver salt selected from the group consisting of the salts of lactic, citric, malic and isomalic acids, drying the impregnated products, and finally heat-treating the dried product at a high temperature, in a gaseous atmosphere containing at least 1% by volume of carbon dioxide.

3,943,070

MANUFACTURE OF SPHEROIDAL ALUMINA PARTICLES

Roy T. Mitsche, Island Lake, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 15, 1974, Ser. No. 514,535

Int. Cl.² C01F *7/00;* B01J *37/00*

U.S. Cl. 252—448 9 Claims

1. A method of manufacturing mixed eta and gamma alumina particles which comprises:

a. admixing and suspending a finely divided eta alumina in an acid anion-containing alumina sol having an aluminum/acid anion ratio of from about 1:1 to about 1.5:1, said alumina being admixed with said sol in an amount to provide from about 20 to about 50 wt. % of the final alumina product;

b. commingling the resulting sol with an ammonia precursor at below gelation temperature, said ammonia precursor being decomposable to ammonia with increasing temperature;

c. dispersing the mixture as droplets in a hot oil bath effecting decomposition of said ammonia precursor and formation of hydrogel spheres therein;

d. aging the spheres at an elevated temperature effecting decomposition of the residual ammonia precursor contained therein, and washing, drying and calcining the aged hydrogel spheres.

3,943,071
METHOD OF MANUFACTURING A SPHEROIDAL REFORMING CATALYST

Roy T. Mitsche, Island Lake, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 15, 1974, Ser. No. 514,536
Int. Cl.² B01J 21/04, 23/42, 23/62
U.S. Cl. 252—448 9 Claims

1. A method of catalyst manufacture which comprises:

a. forming a mixture of a finely divided etaalumina, an acidic alumina hydrosol, and a tin compound which is soluble therein and thermally decomposable to tin oxide, said eta-alumina being admixed with said hydrosol and said tin compound in an amount to provide from about 20 to about 50 wt. % of the final product;

b. commingling the mixture with an ammonia precursor at below gelation temperature, said ammonia precursor being selected from the group consisting of hexamethylenetetramine, urea and mixtures thereof;

c. dispersing the resultant mixture as droplets in a hot oil bath effecting decomposition of said ammonia precursor and the formation of hydrogel spheres therein;

d. aging the spheres at an elevated temperature effecting decomposition of the residual ammonia precursor contained therein and promoting the formation of crystalline boehmite alumina, washing and drying the aged spheres and calcining at 370° – 650° C. to transform boehmite alumina into gamma-alumina; and

e. impregnating the calcined spheres with a platinum group metal acid or salt, drying and calcining.

3,943,072
SEPARATION OF MOLECULES

Alan Russell Thomson, Abingdon, and Brynley John Miles, Faringdon, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Continuation of Ser. No. 312,287, Dec. 5, 1972, abandoned. This application Mar. 28, 1974, Ser. No. 455,948
Claims priority, application United Kingdom, Dec. 15, 1971, 58374/71
Int. Cl.² B01J 21/16, 27/18, 27/02, 21/04
U.S. Cl. 252—455 R 11 Claims

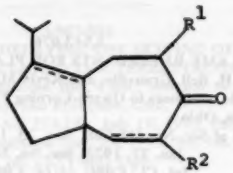
1. A method for producing an inorganic material having interconnected porosity throughout the material for the selective retention of predetermined molecules from a fluid substance containing said molecules including the steps of: mixing a finely divided, substantially insoluble, sorptive, inorganic material, capable of sorbing the molecules, with a solid fugitive additive to form a mixture, including in the mixture a solvent to dissolve fugitive additive in the solvent, said inorganic material being substantially insoluble in said solvent, forming discrete particles from the mixture, and heating the particles to remove solvent and fugitive additive to produce discrete particles of said inorganic material having an interconnected pore structure throughout said discrete particles providing an extended surface area, the pore size being such as will allow said predetermined molecules in said fluid substance to permeate the inorganic particles and be sorbed, said inorganic material being substantially unaffected by said heating utilized to effect removal of solvent and fugitive additive.

3,943,073
ODORANT COMPOSITIONS CONTAINING HYDROZOLENONES

Peter Naegeli, Wettingen, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

Division of Ser. No. 413,469, Nov. 7, 1973. This application Feb. 24, 1975, Ser. No. 552,521
Claims priority, application Switzerland, Nov. 15, 1972, 16607/72
Int. Cl.² A61K 2/46; C11B 9/00
U.S. Cl. 252—522 4 Claims

1. An odorant composition which contains as an essential odor-imparting ingredient an hydroazulenone having the formula:



(I)

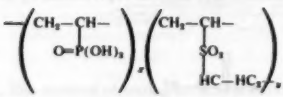
,wherein R^1 and R^2 each independently represent a hydrogen atom or a lower alkyl group and one of the two broken lines represents an additional bond.

3,943,074
VINYL PHOSPHONIC ACID-DIVINYL SULFONE COPOLYMER ION EXCHANGE RESIN

Lothar G. Dulog, St. Martens-Latem, Belgium, assignor to S.A. Texaco Belgium N.V., Brussels, Belgium

Filed June 8, 1973, Ser. No. 368,136
Int. Cl.² C08G 28/00, 30/02
U.S. Cl. 260—2.2 R 4 Claims

1. A vinylphosphonic copolymer ion exchange resin acid catalyst consisting essentially of repeating units of the formula:



wherein the ratio *x/y* ranges from about 0.5 to about 1.5.

3,943,075
POLYURETHANE FOAMS

John Fishbein, Marlow; Raymond William Henry Bell, Great Kings Hill; Anthony James Clarke, Chinnor, and Peter Merriman, Stratford-On-Avon, all of England, assignors to Dunlop Holdings Limited, London, England

Continuation of Ser. No. 148,171, May 28, 1971, Pat. No. 3,803,064. This application Oct. 29, 1973, Ser. No. 410,515
Claims priority, application United Kingdom, June 19, 1970, 30000/70
The portion of the term of this patent subsequent to Dec. 31, 1991, has been disclaimed.
Int. Cl.² C08G 14/18, 73/06
U.S. Cl. 260—2.5 AW 11 Claims

1. A flexible flame-retardant polyurethane foam prepared by the process which comprises reacting a tolylene diisocyanate with a polyalkylene ether polyol having from 20 to 70% primary hydroxyl groups in a foam forming reaction mixture having an isocyanate index of less than 150 and containing (a) a compound which promotes trimerization of tolylene diisocyanate, (b) an amount of a compound containing labile halogen which inhibits heat aging of the foam caused by said trimerization promotor, and (c) a blowing agent, said polyalkylene

ether polyol having a reactivity such that said reaction mixture, in the absence of special measures to the contrary, produces a closed cell foam; and said reaction mixture contains an additional polyol which is different in its constitution from said polyalkylene ether polyol and which is a polyethylene ether glycol or a poly(oxyethylene) poly(oxypropylene) glycol) wherein the poly(oxypropylene) content has a molecular weight of 500 to 2000 and wherein from 20 to 80% of its weight is oxyethylene groups at least some of which are in non-terminal positions, and said additional polyol is from 2 to 40% by weight of the total polyol.

3,943,076

FLAME RETARDANTS FOR PLASTIC FOAMS

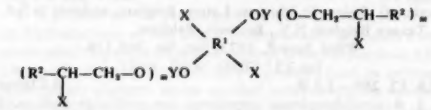
Reuben H. Bell, Granville, and Kevin M. Foley, Hebron, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 418,708, Nov. 23, 1973. This application Jan. 27, 1975, Ser. No. 544,439

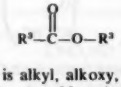
Int. Cl.² C08G *18/14*; C08J *9/00*

U.S. Cl. 260—2.5 AJ **6 Claims**

1. A polyurethane foam composition formed by reacting, in an NCO/OH index ranging from 1/1 to 5/4, one or more compounds having reactive-NCO groups with one or more polyol having reactive —OH groups; the polyurethane foam composition containing, by weight, 0.5 to 25 percent, based on the total weight of the foam compositions, of a flame retardant material represented by the formula:



wherein R^1 is a divalent group selected from alkyl, alkoxy, cycloalkyl, cycloalkoxy, aryl an ester represented by the formula



wherein each R^3 is alkyl, alkoxy, cycloalkyl, cycloalkoxy or aryl, each R^3 having 1 to 20 carbon atoms, or an ether represented by the formula $R^3—O—R^3$ wherein R^3 is as defined above, or a combination thereof, each radical having from 1 to 20 carbon atoms; each R^2 is an alkyl radical having 1 to 20 carbon atoms, each X is chlorine, bromine, fluorine or iodine; one of Y is phosphorus and the other Y is silicon and each *m* is the integer 2 when Y is phosphorus and the integer 3 when Y is silicon.

3,943,077

FIRE RETARDANT POLYURETHANE FOAMS

Reuben H. Bell, Cincinnati; Russell M. Boardway, Jr., Granville; Francis D. Thomson, Newark, all of Ohio, and Donald C. Wysocki, Pittsburgh, Pa., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 360,261, May 14, 1973, abandoned. This application Jan. 6, 1975, Ser. No. 538,647

Int. Cl.² C08J *9/14*

U.S. Cl. 260—2.5 AJ **7 Claims**

1. A polyol composition of at least 3 polyols comprising the following materials in parts by weight:

oxyalkylated, resole-based polyol	20 to 45
ester-containing polyol	10 to 35
bis (2-hydroxyethyl) aminomethylphosphonate	2 to 15

wherein the oxyalkylated, resole-based polyol is a reaction product of an alkylene oxide and a resole formed, under basic conditions, of 2.4 to 2.8 moles of formaldehyde and 1 mole of phenol and the ester containing polyol is a tetrabromophthalic anhydride based polyol prepared from tetrabromophthalic anhydride and a condensation product of propylene oxide and pentaery-thritol.

3,943,078

SOIL PENETRATING, COMPACTING AND CEMENTING COMPOSITION

Thomas Howard James, 3835 Bledsoe Ave., Los Angeles, Calif. 90066

Continuation-in-part of Ser. No. 170,979, Aug. 11, 1971, abandoned. This application Nov. 11, 1974, Ser. No. 522,358

Int. Cl.² C08L *1/28*

U.S. Cl. 260—17 R **11 Claims**

1. A soil treating composition for mixing with water to form an aqueous solution for penetrating, compacting and cementing soil, including a mixture, by weight of:

a. 10 to 30% water;

b. 50 to 90% of a synthetic latex material selected from the group consisting of acrylic copolymer specifically a copolymer comprised of 60–70% of a first monomer constituting ethyl or butyl acrylate and 30–40% of a second monomer constituting methyl methacrylate or vinyl-acrylic copolymers, specifically copolymers comprised of 5–30% of a first monomer constituting butyl acrylate isobutyl acrylate, or 2-ethyl hexyl acrylate and 70–95% of a second monomer constituting vinyl acetate;

c. ¼ to 01% hydroxy ethyl cellulose;

d. 01 to 05% aluminum sulfate;

e. 01 to 04% magnesium sulfate; and,

f. ¼ to 01% powdered citric acid.

3,943,079

DISCONTINUOUS CELLULOSE FIBER TREATED WITH PLASTIC POLYMER AND LUBRICANT

Parviz Hamed, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Filed Mar. 15, 1974, Ser. No. 451,519

Int. Cl.² C08L *1/02*

U.S. Cl. 260—17.4 BB **25 Claims**

1. A treated fiber comprising discontinuous cellulose fiber of aspect ratio greater than one, organic polymer, which can be processed as a thermoplastic substance, in amount sufficient to reduce fiber-to-fiber affinity up to 50 parts by weight per 100 parts by weight of the fiber and lubricant, said lubricant being an oily or unctuous organic material of molecular weight greater than 95 characterized by being adsorbable to the fiber surface and enhancing receptiveness of the fiber to said polymer, adsorbed by the fiber in amount sufficient to enhance receptiveness of the fiber to the polymer and separation of individual fibers.

3,943,080

ORGANIC FLATTING AGENTS AND METHOD OF PREPARATION

Marco Wismer, Gibsonia; Karl F. Schimmel, Verona, and Rodger G. Temple, Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 347,604, April 3, 1973, Pat. No. 3,850,868. This application Aug. 1, 1974, Ser. No. 493,818

Int. Cl.² C09D *3/52*, *3/56*, *3/66*

U.S. Cl. 260—20 **4 Claims**

1. A coating composition comprising a film forming resinous vehicle and incorporated therein agglomerated particulate

beads having a gross particle size of from about 1 to about 50 microns in an amount sufficient to have a flatting effect on films of said filmforming material, wherein said beads consist essentially of urea or phenol and formaldehyde prepared by the method comprising:

A. reacting a urea or a phenol and a formaldehyde, wherein the molar ratio of the urea to the formaldehyde is from about 1:1 to about 3:0.5 and wherein the molar ratio of the phenol to the formaldehyde is from about 1:1 to about 1:3, in a basic aqueous medium to form a prepolymer;

B. blending said prepolymer with a hydroxyfunctional protective colloid-forming material;

C. polymerizing the prepolymer by acidifying the mixture thus formed under agitation, thereby forming particulate beads and agglomerating said beads to a gross particle size of from about 1 micron to about 50 microns; and

D. collecting said urea or phenol-formaldehyde particulate beads.

3,943,081

STABILIZERS FOR POLYVINYL CHLORIDE

John W. Brook, Plainfield, N.J., assignor to Claremont Polychemical Corporation, Roslyn Heights, N.Y.

Filed July 2, 1974, Ser. No. 485,180
Int. Cl.² C08J *3/20*
U.S. Cl. 260—23 XA **33 Claims**

16. A stabilized vinyl chloride resin composition which has incorporated therein at least one alkaline earth metal salt of an organic acidic compound selected from the group consisting of organic carboxylic acids and phenols, zinc chloride in solution in an aliphatic organic hydroxyl-containing compound and at least one organophosphite, the alkaline earth metal to zinc chloride ratio in the composition being from about 1 to 1 to about 4 to 1, and the zinc chloride to hydroxyl-containing compound being from about 2 to 1 to about 1 to 20, the stabilizer components in the resin composition being present in the amounts of 0.03 to 0.3 parts by weight of alkaline earth salt, 0.005 to 0.30 parts by weight zinc chloride, 0.01 to 1.0 parts by weight of organic hydroxyl-containing compound, and 0.00 to 5.0 parts by weight of organophosphite per one hundred parts by weight of vinyl chloride resin.

3,943,082

THERMOSETTING POWDER COATINGS

Oliver Wendell Smith, South Charleston, and Joseph Victor Koleske, Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 4, 1974, Ser. No. 529,524
Int. Cl.² C08K *5/15;* **C08L** *63/02, 91/00*
U.S. Cl. 260—23 AR **10 Claims**

1. A powder coating composition which comprises a mixture of:

A. a vinyl polymer of (a) from 50 to 90 weight per cent of vinyl chloride, (b) from 1 to 25 weight per cent of glycidyl acrylate or methacrylate compound, (c) from 0 to 40 weight per cent of vinyl acetate and (d) from 0 to 40 weight per cent of other ethylenically unsaturated polymerizable monomers having the >C=C< group; said polymer having a number average molecular weight of from 2,500 to 40,000;

B. an epoxy resin plasticizer at a concentration of from 1 to 15 weight per cent of said vinyl polymer; said plasticizer selected from the group consisting of bisphenol epoxide resins, cycloaliphatic epoxides and resins thereof, aliphatic diglycidyl ethers and esters and epoxidized fatty oils; and

C. a crosslinker for the oxirane moiety in said vinyl polymer and said epoxy resin plasticizer, said crosslinker being present at a concentration of from 0.1 to 1 mole equivalent of reactive group thereof per mole equivalent of oxirane group.

3,943,083

WELL CEMENTING COMPOSITION CONTAINING POLYMALEIC ANHYDRIDE AND HAVING IMPROVED FLOW PROPERTIES

Sally L. Adams, Pittsburgh; Michael M. Cook, McKees Rocks, both of Pa., and Fred David Martin, Boxford, Mass., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed May 1, 1974, Ser. No. 465,938
Int. Cl.² C08K *3/00*
U.S. Cl. 260—29.6 S **7 Claims**

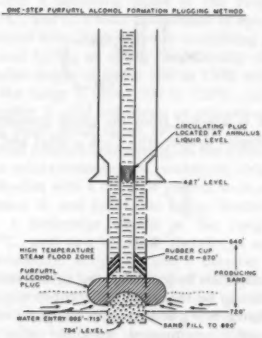
1. A well cementing composition consisting essentially of hydraulic cement in admixture with from about 0.01 to about 5.0 percent by weight, based on weight of hydraulic cement, of polymaleic anhydride having a weight average molecular weight of from about 200 to about 10,000.

3,943,084

METHOD FOR DELAYING THE SETTING OF AND ACID-SETTABLE LIQUID IN A TERRESTRIAL ZONE

Patrick H. Hess, Diamond Bar, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 273,256, July 19, 1972, Pat. No. 3,850,249. This application Nov. 23, 1973, Ser. No. 418,624
Int. Cl.² C08G *4/00*
U.S. Cl. 260—29.6 H **6 Claims**



1. The method of setting an acid-settable liquid which sets at a temperature in the range from about −10°C. to 175°C. at a pH of less than about 5, which comprises dissolving in said liquid in parts by weight an amount of a delayed latent catalyst in the range from about 2 to 20 parts per 100 parts of the liquid, said catalyst being a mixture of a component which releases a strong acid and a basic component wherein the mixture contains an amount of base in the range from 0.02 to 0.98 equivalent per equivalent of releasable strong acid from the acid-releasing component; said liquid being an organic liquid selected from the group consisting of:

a. acid-settable hydroxylic liquids;

b. nonhydroxylic acid-settable liquids which contain at least an effective amount of a hydroxylic acid-settable liquid; and

c. nonhydroxylic acid-settable liquids which contain at least an effective amount of a soluble diluent selected from the group consisting of:

1. water;

2. one or more substantially neutral organic compounds of the formula $R(OH)_n$, in which n is 1, 2 or 3 and R is an organic radical; and

3. a mixture of the compounds of 2) and water;

said basic component being one or more suitable bases selected from the group consisting of organic and inorganic salt-forming bases having a pKb of less than about 13.5; and said acid-releasing component being one or

more substantially neutral compounds selected from the group consisting of organic compounds which release a strong acid under solvolytic conditions at a rate in the range of from about 10^{-3} to 10^{-6} equivalent of the acid per liter per minute at said temperature.

3,943,085

SUSPENSION COPOLYMER COMPOSITION

Paul Kraft, Spring Valley, and Siegfried Altscher, Monsey, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 346,198, March 29, 1973, abandoned, which is a division of Ser. No. 49,209, June 23, 1970, Pat. No. 3,725,509. This application Feb. 7, 1975, Ser. No. 548,060

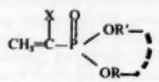
The portion of the term of this patent subsequent to Jan. 27, 1993, has been disclaimed.

Int. Cl.² C08F *230/02*

U.S. Cl. 260—29.6 H **11 Claims**

1. An aqueous suspension of particles of a suspension copolymer consisting of:

1. from about 2.5 to 99%, by weight of at least one bis (hydrocarbyl) vinylphosphonate having the structure:



wherein X is selected from the group consisting of hydrogen, halogen, cyano, aryl, C_1–C_{18} alkyl and

wherein R and R′ are hydrocarbyl and substituted hydrocarbyl groups which can be the same, different or conjoint; and

2. the balance being at least one halogen-containing α, β-ethylenically unsaturated monomer selected from the group consisting of the vinyl halides and the vinylidene halides.

3,943,086

WATER-SOLUBLE COATING COMPOSITION AND METHOD FOR MAKING SAME

Charles Schein, 52, Avenue Foch, 75016 Paris, and Jean-Jacques Le Minez, 7, rue Mansart, 91540 Memmecy, both of France

Filed Feb. 27, 1974, Ser. No. 446,310

Claims priority, application France, Feb. 27, 1973, 73.06962; June 22, 1973, 73.22889

Int. Cl.² C08F *8/46, 279/02*

U.S. Cl. 260—29.7 D **23 Claims**

1. A method for the preparation of an addition product binder suitable for a water-soluble coating composition capable of being applied by electrodeposition, wherein at least one solid polycycloalkadiene having a ball and ring melting point of from 70° to 100°C and a molecular weight of from 700 to 800 is dissolved in at least one liquid polyalkadiene conjugated polymer of molecular weight from 500 to 5000 by mixing; this mixture is maintained at a substantially constant temperature and an adduct formation reaction is initiated by the addition of at least one unsaturated polycarboxylic acid or its anhydride to the dissolved mixture.

3,943,087

FIREPROOF SELF EXTINGUISHING COMPOSITION

Ottmar Leuchs, Hannover-Bothfeld, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshuette AG, Germany

Continuation-in-part of Ser. No. 823,033, May 8, 1969, abandoned. This application Jan. 25, 1971, Ser. No. 109,390

Claims priority, application Germany, May 11, 1968, 1769343

Int. Cl.² C08K *5/49*

U.S. Cl. 260—30.6 R **12 Claims**

1. A fireproof self extinguishing composition, comprising:

a polymer which evolves hydrogen chloride at temperatures encountered in a fire; a plasticizing amount of a non-flammable plasticizer; and a material selected from the group consisting of the carbonates of calcium, barium, magnesium, strontium, sodium, potassium, lithium and mixtures thereof, said material having an average particle size which does not exceed 250 millimicrons and being present in an amount which is at least sufficient to combine with essentially the entire amount of hydrogen chloride which is evolved at temperatures which occur in a fire to thereby prevent evolution into the surrounding atmosphere of the hydrogen chloride when the composition is subjected to said temperatures.

3,943,088

POLY(FLUOROALKLXYPHOSPHAZENES)

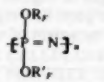
Gary Stephen Kyker, Uniontown, and Thomas Anthony Antkowiak, Rittman, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jan. 25, 1974, Ser. No. 436,566

Int. Cl.² C08K *5/51*; C08L *85/02*

U.S. Cl. 260—30.6 R **6 Claims**

1. A composition comprising at least one poly(fluoroalkoxyphosphazene) polymer having a molecular weight between about 3×10^4 and 3×10^6 and at least one lower molecular weight polyphosphazene oil having a molecular weight up to about 4×10^3 and represented by the formula



in which n represents an integer from 3 to 100 and R_f and R'_f each represent a monovalent radical represented by the formula $-(CH_2)_m(CF_2)_qCF_2Z$, in which m is an integer of from 1 to 10, and q is an integer from 1 to 20, and Z is selected from the group consisting of F and H, the amount of said oil being between 2 and 50 parts by weight per hundred parts by weight of said polymer.

3,943,089

QUICK-HARDENING CORE AND MOLDING SAND COMPOSITION, AND A METHOD FOR ITS HARDENING

Jan Harpula; Jur Piszak; Mieczyslaw Debski; Tadeusz Rzepa; Jerzy Sliwa, and Andrzej Heryan, all of Krakow, Poland, assignors to Instytut Odlewnictwa, Krakow, Poland

Continuation-in-part of Ser. No. 273,957, July 21, 1972, abandoned. This application May 24, 1974, Ser. No. 473,314

Claims priority, application Poland, Dec. 27, 1971, 152497

Int. Cl.² B22C *1/22*

U.S. Cl. 260—33.6 UA **5 Claims**

1. A quick-hardening core and molding sand composition comprising quartz sand and a binder solution, said binder solution comprising a binding agent of molecular weight of 100,000–350,000 selected from the group consisting of polystyrene, polyvinyl acetate, polymethylmethacrylate, polyethyl-methacrylate, derivatives of cellulose, and mixtures thereof, and an organic solvent for the binding agent selected from the group consisting of aliphatic and aromatic hydrocarbons, said

binding agent being present in said solution in a concentration of 10 to 65%.

3,943,090

CARBON FIBRE COMPOSITES

James A. Enever, Loughborough, England, assignor to British Railways Board, London, England

Filed June 28, 1972, Ser. No. 266,873

Int. Cl.² C08L *63/00, 75/00*

U.S. Cl. 260—37 EP **2 Claims**

1. A method of forming a composite of carbon fibers and synthetic plastics material by embodying the fibers in a matrix of an epoxy resin material and including the provision in the interfacial region of the carbon fibers and epoxy material of reactive urethane polymer which is compatible with the epoxy material.

3,943,091

COMPOSITIONS FOR PREPARING ROOM TEMPERATURE VULCANIZING TYPE SILICONE RUBBERS

Taichiro Akiyama, 19-23, Shimoochiai 2-chome, Shinjuku, Tokyo, Japan

Filed Feb. 4, 1974, Ser. No. 439,205

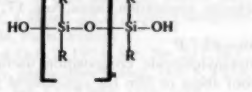
Claims priority, application Japan, Mar. 17, 1973, 48-31171

Int. Cl.² C08L *83/04*

U.S. Cl. 260—37 SB **9 Claims**

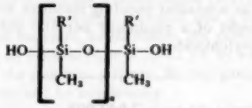
1. A composite article for preparing room temperature vulcanizing type silicone rubbers, said article comprising a combination of:

A. at least one part of a putty like primary agent containing a compound selected from the group consisting of siloxanediols expressed by general formulae



(1)

and



(2)

wherein, in formula (1), R respectively represents a methyl radical, a phenyl radical or a vinyl radical, and *n* is an integer of from 500 to 50,000 and in formula (2), R′ respectively represents a hydrogen radical and n is an integer of from 2 to 1,000 and a fine powder of a filler, the weight ratio of said compound to said filler being from 1:1 to 13:1, and

B. at least another part of a putty like secondary agent containing a polyhydric alcohol, $Ca(OH)_2$ and a fine powder of a filler, having a weight ratio of 100 parts by weight of the polyol, 20–40 parts by weight of $Ca(OH)_2$, and 80–120 parts be weight of the fine powder filler, said primary and secondary agents shaped as independent bodies or masses, and maintained in intimate contact at the interfaces thereof.

3,943,092

METHOD OF PRODUCING A DRYING FILTER

Jorn Marius Schmidt, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Continuation of Ser. No. 373,017, June 25, 1973, abandoned. This application Oct. 15, 1974, Ser. No. 514,887

Claims priority, application Germany, July 3, 1972, 2232533

Int. Cl.² C08L *63/02*

U.S. Cl. 260—37 EP **5 Claims**

1. A method of producing shaped drying filters which comprises forming a mixture consisting essentially of particles of silica gel and from 5 to 8 percent by weight based on the weight of the gel of a heat curable powder epoxy resin composition having a particle size of less than 70 microns and having a cure temperature of at least about 180°C. and selected from the group consisting of:

a. a powdered mixture comprising, as the epoxy resin component, a mixture of i) a solid condensate of epichlorohydrin and bisphenol A, and having an epoxy functionality of at least 1, a molecular weight of from about 900 to 10,000 and a softening point in the range of about 60°–140°C., and ii) a solid condensate of epichlorohydrin and a phenol-formaldehyde resin containing active —OH groups, and having an epoxy functionality of about 3–7, a molecular weight of about 500 to 1500 and a softening point in the range of about 300 to 120°C.; and, as a hardener therefor, a solid anhydride or polyanhydride having a melting point about about 50°C., and

b. a powdered mixture comprising, as the epoxy resin component, a solid condensate of epichlorohydrin or glycerol dichlorohydrin with a dihydric phenol such as resorcinol or bisphenol A, and having an epoxy functionality of at least 1, a molecular weight in the range of about 65°–130°C.; and, as a hardener therefor, a solid condensate of trimellitic anhydride and a dihydric alcohol selected from the group consisting of diethylene to pentaethylene glycols, di- and tri-propylene glycol and C_5–C_8 alkane 2ω diols; the mixture being formed at a first temperature below the cure temperature of the resin, compressing the mixture to form a shaped body, and heating the compressed mixture to said cure temperature to cure the said resin.

3,943,093

PROCESS FOR MINIMIZING HEAT-PROMOTED INTERACTION BETWEEN BROMINATED BUTYL AND CARBON BLACK DURING COMPOUNDING

George Feniak, Wyoming, Canada, assignor to Polysar Limited, Sarnia, Canada

Filed June 28, 1974, Ser. No. 484,069

Claims priority, application Canada, Oct. 17, 1973, 183638

Int. Cl.² C08K *3/38, 3/04, 5/09*

U.S. Cl. 260—42 **1 Claim**

1. An improved process for reducing the heat promoted interaction of brominated butyl and carbon blacks other than channel carbon black in which the brominated butyl containing from 0.5 to 5 weight per cent of bromine and carbon black are mixed at temperatures from 135°C to about 180°C, characterized in that said mixing is in the presence of from 0.1 to 2 parts by weight per 100 parts by weight of brominated butyl of an interaction retarding agent selected from boron compounds having at least one oxygen atom chemically bonded to boron and selected from boron oxide, boric acid and borate esters of formula $R_3O—B(OR_2)—OR_1$, wherein R_1, R_2 and R_3 may be the same or different and are C_1–C_{12} hydrocarbyl radicals.

3,943,094

POLYMERS AND COPOLYMERS BASED ON ALKENOYL-OXYBENZYLIDENE-MALONIC ESTERS AS UV-ABSORBERS AND POLYMERS STABILIZED THEREWITH

Dieter Margotte, Krefeld-Bockum; Burkhard Lachmann, Krefeld-Uerdingen; Hugo Vernaleken, Krefeld; Hans Rudolph, Krefeld, and Wolfgang Cohnen, Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

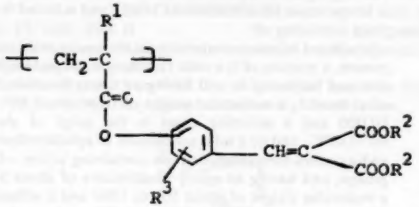
Division of Ser. No. 372,724, June 22, 1973, Pat. No. 3,875,123. This application Jan. 10, 1975, Ser. No. 540,306

Claims priority, application Germany, June 28, 1972, 2231531; June 28, 1972, 2231532

Int. Cl.[2] C08K 5/00; C08L 69/00

U.S. Cl. 260—42.21 11 Claims

2. Polycarbonate molding compositions containing an effective amount of UV-light absorbing polymers, said polymers comprising UV-light absorbing groups of the formula



wherein

R^1 is hydrogen or alkyl with C_1 to C_4;

R^2 is alkyl with C_1 to C_{12} or cycloalkyl; and

R^3 is hydrogen, alkyl with C_1 to C_8, alkoxy with C_1 to C_8 or halogen.

3,943,095

ACID DYEABLE YARN FROM POLYAMIDE HAVING N,N'-DI (3-AMINOPROPYL)PIPERAZINE MOIETY UNITS

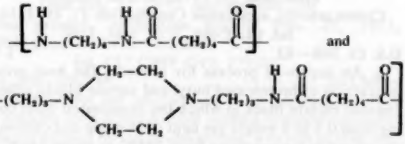
Richard Donnan Livingston, Seaford, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 26, 1974, Ser. No. 509,734

Int. Cl.[2] C08K 5/50; C08G 69/26

U.S. Cl. 260—45.7 P 4 Claims

1. A yarn with high capability of being deeply dyed with acid dyes, spun from composition consisting essentially of a copolyamide having a relative viscosity of from about 35–75 as determined using an 8.4 weight percent solution of the polyamide dissolved in a 90/10 weight by weight formic acid/water solution at 25°C., and a primary amine end concentration of from 35–80 gram equivalents per 10^6 grams of copolyamide, said copolyamide consisting essentially of the following repeating units:



and

the units containing the piperazine ring constituting from about 0.3 to 3.5% of the total number of repeating units, said copolyamide having been produced with the introduction of from about 0.05 to 0.5% by weight based on polymer weight, an organic phosphorous compound selected from the group consisting of phenylphosphinic acid, sodium-, potassium- or hexamethylenediammonium phenylphosphinate prior to extrusion of the polymer.

3,943,096

USE OF HYDROXYPHENYLURETHANES FOR STABILISING ELASTOMERS

Kurt Schwarzenbach, Pfeffingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

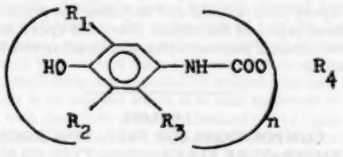
Filed Apr. 3, 1975, Ser. No. 564,935

Claims priority, application Switzerland, Apr. 9, 1974, 4992/74

Int. Cl.[2] C08J 3/20

U.S. Cl. 260—45.85 A 11 Claims

1. Stabilised elastomer containing compounds of the formula I



wherein R_1 denotes alkyl with 3 or 4 carbon atoms, R_2 denotes alkyl with 1 – 4 carbon atoms, R_3 denotes hydrogen or methyl, n denotes 1 or 2 and R_4, if n is 1, denotes alkyl with 8 – 14 carbon atoms, cycloalkyl with 5 or 6 carbon atoms, benzyl, phenyl, phenyl substituted by 1 to 2 alkyl groups and/or alkoxy groups each with 1 – 8 carbon atoms, phenylthioalkyl with 8 – 9 carbon atoms, a radical of the formula

$$-(CH_2)_m-X-R \qquad \text{(Ia)}$$

wherein X is oxygen or sulphur, R is alkyl with 1 – 4 carbon atoms and *m* is 2 or 3, or, if n is 2, denotes alkylene with 2 – 8 carbon atoms, phenylene or a radical of the formula

$$-(CH_2)_m-X-(CH_2)_q- \qquad \text{(Ib)}$$

wherein X is oxygen or sulphur and m and q independently of one another are 2 or 3.

3,943,097

POLYVINYL CHLORIDE COMPOSITIONS CONTAINING TRIXYLYL PHOSPATE AND A SECOND PLASTICIZER

Fumio Kawagoshi, Aichi, and Motohiro Moriwaki, Nagoya, both of Japan, assignors to Mitsubishi Monsanto Chemical Company, Tokyo, Japan

Filed Aug. 17, 1973, Ser. No. 389,131

Claims priority, application Japan, Aug. 17, 1972, 47-82271

Int. Cl.[2] C08K 5/49

U.S. Cl. 260—45.7 P 3 Claims

1. A polyvinylchloride composition useful as a molded, weather-proof sheet or film for agricultural purposes, which comprises:

a mixture of from 1 to 20 parts by weight of trixylyl phosphate as a weather-proofing stabilizer and 49 to 30 parts by weight of a plasticizer per 100 parts by weight of polyvinylchloride.

3,943,098

1-AZA-4-THIACYCLOHEXANE-4,4-DIOXIDE DERIVATIVES AND THEIR USE AS AGENTS PROTECTING AGAINST LIGHT RAYS

Jean Rody, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

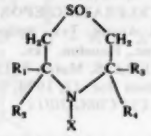
Filed Oct. 16, 1973, Ser. No. 407,000

Claims priority, application Switzerland, Oct. 19, 1972, 15304/72; Apr. 19, 1973, 5755/73; July 26, 1973, 10930/73

Int. Cl.[2] C08K 5/46

U.S. Cl. 260—45.8 SN 29 Claims

1. A composition containing organic polymer and a compound of the formula I



(I)

wherein

R_1,R_2,R_3 and R_4 each independently are lower alkyl, or R_1 and R_2 and/or R_3 and R_4 together with the carbon atom to which they are bound form a cycloalkyl ring, and

X is hydrogen, unsubstituted alkyl, substituted alkyl selected from hydroxyalkyl, carboxyalkyl, alkyl substituted with ester groups selected from alkoxycarbonylalkyl, alkylcarbonyloxyalkyl, arylcarbonyloxyalkyl, cycloalkylcarbonyloxyalkyl, and aralkylcarbonyloxyalkyl, amidoalkyl, nitriloalkyl, alkyl substituted with ether groups, alkyl substituted with thioether groups, alkyl substituted with arylthio groups, alkyl substituted with sulphoxide groups, alkyl substituted with sulphone groups, aminoalkyl unsubstiuted on the nitrogen atom, aminoalkyl substituted on the nitrogen atom with alkyl or nitriloalkyl, and haloalkyl, alkenyl, alkynyl, unsubstituted aralkyl, aralkyl substituted on the alkylene moiety by hydroxy, alkylcarbonyloxy, arylcarbonyloxy or halogen, acyl, halogen, —O.,—.NO, or NR_5R_6, wherein R_5 and R_6 each independently are hydrogen, unsubstituted alkyl, substituted alkyl selected from hydroxyalkyl, carboxyalkyl, alkyl substituted with ester groups selected from alkoxycarbonyalkyl, alkylcarbonyloxyalkyl, arylcarbonyloxyalkyl, cycloalkylcarbonyloxyalkyl, or aralkylcarbonyloxyalkyl, amidoalkyl, nitriloalkyl, alkyl substituted with ether groups, alkyl substituted with thioether groups, alkyl substituted with arylthio groups, alkyl substituted with sulphoxide groups, alkyl substituted with sulphone groups, aminoalkyl unsubstituted on the nitrogen atom, aminoalkyl substituted on the nitrogen atom with alkyl, or nitriloalkyl, and haloalkyl; or R_5 is acyl, or R_5 and R_6 together with the nitrogen atom to which they are bound form a ring,

or their stabilizer compatible salts with organic or inorganic acids.

3,943,099

PROCESS FOR STABILISING HALOGENATED VINYL RESINS

Georges Bakassian, Ste-Foy-les-Lyon; Michel Gay, Lyon, and Marcel Lefort, Caluire, all of France, assignors to Rhone-Poulenc Textile, Paris, France

Filed Oct. 2, 1974, Ser. No. 511,263

Claims priority, application France, Oct. 5, 1973, 73.35684

Int. Cl.² C08K *3/16, 5/58*

U.S. Cl. 260—45.75 E **10 Claims**

1. A process for stabilising a halogenated vinyl resin which comprises incorporating stannic chloride and a diorgano-tin dimercaptide into the resin, as stabilisers, the stannic chloride being present in an amount from 0.2% to 5% by weight based on the weight of the stabiliser mixture, the diorgano-tin dimercaptide being obtained by condensing

a. a diorgano derivative of tetravalent tin selected from a dialkyl-tin oxide of formula R_2SnO, and a dichloro-dialkyl-stannane of formula R_2SnCl_2, in which each R radical which may be identical or different, represents a straight or branched alkyl group with up to 10 carbon atoms; with

b. a mono- or poly-mercaptan containing one or more ester groups, selected from a mercaptocarboxylic acid ester of the formula:

$$HS - X - COOR'$$

in which X represents a straight or branched alkylene group with up to 4 carbon atoms or a phenylene group, and R' represents an alkyl or alkenyl group with at most 10 carbon atoms, a cycloalkyl or cycloalkenyl group with 5 or 6 carbon atoms in the ring, or a phenylalkyl group, the alkyl part of which possesses 1 to 4 carbon atoms; and an α,ω-dimercaptodiester of the formula:

$$HS - X - COO - Y - OCO - X - SH$$

in which X is as defined above and Y represents either a straight or branched aliphatic divalent hydrocarbon radical with at most 10 carbon atoms, or a cycloaliphatic divalent hydrocarbon radical with 5 or 6 carbon atoms in the ring, said radical optionally containing one or two ethylenic and/or acetylenic bonds.

3,943,100

NYLON FLAME RETARDANTS BASED ON CERTAIN ORGANIC ACIDS

Morris B. Berenbaum, Williamsville; Kenneth B. Gilleo, Depew, and Francis E. Evans, Hamburg, all of N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Dec. 17, 1973, Ser. No. 425,486

Int. Cl.² C08J *3/20*

U.S. Cl. 260—45.85 T **5 Claims**

1. A solid composition comprising a nylon polymer and from about 0.5 to about 25 weight percent of a flame retardant additive which is thiomalic acid, dimercaptosuccinic acid, gallic acid, citric acid or tartaric acid, or the ammonium, lithium or magnesium salts thereof.

3,943,101

PROCESS FOR PREPARING POLYCARBONATES WITH A METAL CHELATING AGENT

Jorgen H. Vestergaard, and Gary W. Ragsdale, both of Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed May 31, 1974, Ser. No. 475,131

Int. Cl.² C08J *3/20*

U.S. Cl. 260—45.85 R **11 Claims**

1. In a process for preparing a color stable aromatic carbonate polymer by reacting a dihydric phenol and an alkali metal hydroxide with a carbonate precursor, the improvement which comprises carrying out the reaction in the presence of a stabilizing amount of gluconic acid or its alkali metal salts.

3,943,102

COMPOSITIONS STABILIZED WITH POLYOL ESTERS OF BENZOYLOXYBENZOIC ACIDS

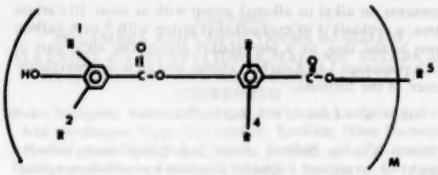
John J. Spivack, Spring Valley, and John J. Luzzi, Carmel, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 318,326, Dec. 26, 1972, Pat. No. 3,884,960. This application Mar. 17, 1975, Ser. No. 558,983

Int. Cl.² C08J *3/20*

U.S. Cl. 260—45.85 B **11 Claims**

1. A composition of matter stabilized against degradation which comprises an organic material subject to oxidative and ultraviolet light degradation and from 0.01 to 5% by weight of the stabilized composition of a benzoyloxybenzoate having the formula



wherein

R^1, R^2 and R^3 are lower alkyl or lower cycloalkyl groups,

R^4 hydrogen, lower alkyl or lower cycloalkyl,

R^5 is alkylene or oxyalkylene having up to 18 carbon atoms, and

m is an integer from 2 to 4.

3,943,103

RADIATION CURABLE COMPOSITIONS OF VINYL ACETATE POLYMERS

George Wayne Borden, Niantic, Conn., and Charles Hobert Carder, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Apr. 9, 1974, Ser. No. 459,294

Int. Cl.² C08F *218/08*

U.S. Cl. 260—47 UA **23 Claims**

1. A radiation curable composition consisting essentially of (A) from 5 to 70 weight percent of a low molecular weight vinyl acetate polymer, said polymer containing from 5 to 100 mole percent vinyl acetate polymerized therein and having an inherent viscosity of below 0.25 as determined at 30°C. using a solution of 0.2 gram of resin per 100 ml. of cyclohexane, (B) from 10 to 70 weight percent of a polyfunctional reactive compound containing at least two radiation curable polymerizable

groups in the molecule, and (C) from 0 to 60 weight percent of a monofunctional reactive compound containing a radiation curable polymerizable

group in the molecule.

3,943,104

METHOD OF ACCELERATING EPOXY CURING

Harold George Waddill, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

Division of Ser. No. 339,608, March 9, 1973, Pat. No. 3,875,072. This application Dec. 12, 1974, Ser. No. 531,997

Int. Cl.² C08G *30/14*

U.S. Cl. 260—47 EN **7 Claims**

1. In a process for curing a polyglycidyl ether of a polyhydric phenol with a polyoxyalkylenepolyamine by combining a polyglycidyl ether of a polyhydric phenol with stoichiometric quantities of a polyoxyalkylenepolyamine, the improvement which comprises:

accelerating said curing by addition of an accelerator combination of piperazine and an alkanolamine, said accelerator combination having a weight ratio of about 1:8 to 1:1 piperazine to alkanolamine.

3,943,105

PROCESS FOR TREATING DYED AND UNDYED POLYESTER MATERIALS WITH AN AGENT TO OVERCOME OR INHIBIT THE DESTRUCTIVE EFFECTS OF ULTRAVIOLET LIGHT

Julius Hermes, Martinsville, Va., assignor to Martin Processing Company, Incorporated, Martinsville, Va.

Continuation-in-part of Ser. No. 878,934, Nov. 21, 1969, abandoned, which is a continuation-in-part of Ser. No. 553,683, May 31, 1966, abandoned. This application Dec. 7, 1971, Ser. No. 205,717

Int. Cl.² C08G *63/70*

U.S. Cl. 260—47 C **6 Claims**

1. A process for treating dyed or undyed polyester materials for rendering the same resistant to attack by ultraviolet light comprising; contacting the surface of the polyester material for a period of from 2 to 30 seconds with a heated bath maintained at a temperature of from 250° to 430°F. to heat the polyester material to a temperature of less than 430°F., said bath containing a non-volatile polyhydric alcohol as a carrier and an ultraviolet light absorber which is soluble in the polyhydric alcohol and compatible with the polyester material in effective concentrations such that effective amounts of the ultraviolet light absorber are incorporated into the polyester material together with polyhydric alcohol to ensure substantially complete penetration of the bath solution, washing the treated polyester material to remove excess bath solution from the surfaces of the polyester material in an aqueous solution at a temperature less than the treatment temperature; then subjecting the washed polyester material to heat so as to raise the temperature of the material to between 350° and 430°F. for a period of time of from 3 to 30 seconds to remove the remaining polyhydric alcohol entrapped in the polyester material whereby the ultraviolet absorber remains intimately combined with the heat treated polyester material to render it resistant to ultraviolet light.

3,943,106

POLYMERIC MALONATES

Andreas Schmidt, Reinach, and Hansjörg Heller, Riehen, both of Switzerland, assignors to CIBA-GEIGY Corporation, Ardsley, N.Y.

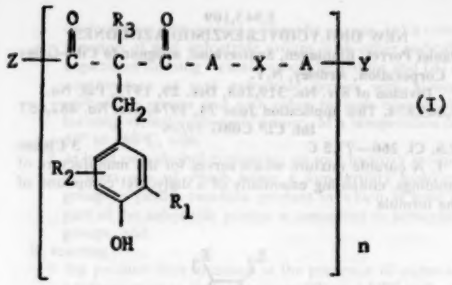
Filed Apr. 30, 1973, Ser. No. 355,985

Claims priority, application Switzerland, May 4, 1972, 6614/72

Int. Cl.² C08G *63/02*

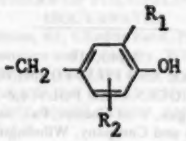
U.S. Cl. 260—47 C **3 Claims**

1. A polymer resin of the general formula I



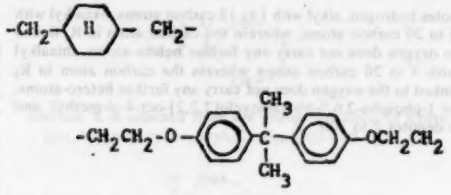
(I)

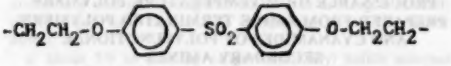
wherein R_1 and R_2 denote alkyl with 1 to 5 carbon atoms, cycloalkyl with 6 to 8 carbon atoms or aralkyl with 7 to 9 carbon atoms, R_3 denotes hydrogen, alkyl with 1 to 18 carbon atoms, or the group

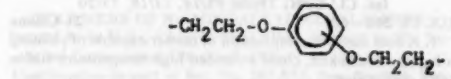


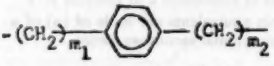
A denotes —O—; —NH—; or

wherein R_4 is an alkyl group with 1 – 4 carbon atoms, X denotes alkylene with 2 to 18 carbon atoms, alkenylene with 4 to 18 carbon atoms wherein A is directly linked to a saturated carbon atom in the alkenylene, oxaalkylene with 4 to 18 carbon atoms wherein A is directly linked to a carbon atom in the oxaalkylene which does not carry any further hetero-atoms, thiaalkylene with 4 to 18 carbon atoms wherein A is directly linked to a carbon atom in the thiaalkylene which does not carry any further hetero-atoms, mercaptoalkylene with 3 to 18 carbon atoms, alkylthioalkylene with 4 to 21 carbon atoms, hydroxyalkylene with 3 to 18 carbon atoms, acyloxyalkylene with 5 to 21 carbon atoms, phenoxyalkylene with 9 to 20 carbon atoms, or alkoxyalkylene with 4 to 21 carbon atoms, wherein the mercapto, alkylthio, hydroxyl, acyloxy, phenoxy or alkoxy group of the mercaptoalkylene, alkylthioalkylene, hydroxyalkylene, acyloxyalkylene, phenoxyalkylene or alkoxyalkylene is bonded to a carbon atom not linked to the group A, or a group

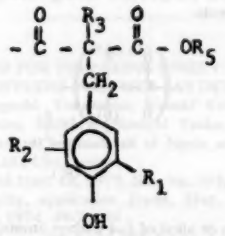








wherein m_1 and m_2 are 1, 2, or 3, Y denotes hydrogen or the group



Z denotes OR_5 or, if Y denotes hydrogen, also denotes the group

$$-A-X-A-H.$$

with the abovementioned meanings for A and X and R_5 de-

notes hydrogen, alkyl with 1 to 18 carbon atoms, oxaalkyl with 3 to 20 carbon atoms, wherein the carbon atom in R_5 linked to oxygen does not carry any further hetero-atoms, thiaalkyl with 3 to 20 carbon atoms wherein the carbon atom in R_5 linked to the oxygen does not carry any further hetero-atoms, or 1-phospha-2,6,7-trioxabicyclo[2,2,2]-oct-4-yl-methyl, and *n* denotes 2 to 100.

3,943,107

PROCESSABLE HIGH TEMPERATURE POLYMERS PREPARED FROM AMINE TERMINATED POLYMERS AND CYANAMIDES OF POLYFUNCTIONAL SECONDARY AMINES

Raymond Seltzer, New City, and Paul D. Sherman, Shrub Oak, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 4, 1974, Ser. No. 430,967
Int. Cl.² C08G *73/10, 73/14, 73/18, 73/20*
U.S. Cl. 260—65 **21 Claims**

1. A heat curable composition of matter capable of yielding a highly crosslinked, chain extended high temperature stable resin comprising:

a. A prepolymer resin selected from a primary amine terminated polyimide, polyamide-imide, polyamide acid, polyamide-amide acid, polybenzimidazole, polypyrrone, polythiadiazole, polyquinoxaline, polybenzothiazole, polyamide, polyarylsulfone, and polyphenylenesulfide, and

b. about 0.5 to 5.0 mole equivalents per mole of (a) of a cyanamide of a polyfunctional secondary amine.

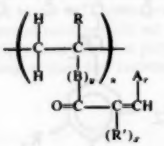
3,943,108

PHOTOCONDUCTIVE COMPOSITION OF AN ALDEHYDE CONDENSATE

Leon A. Teuscher, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 27, 1974, Ser. No. 509,771
Int. Cl.² C08F *257/02;* **C08L** *25/06;* **G03C** *1/00*
U.S. Cl. 260—73 R **9 Claims**

1. A polymeric composition having recurring structural units of the formula



wherein

R is hydrogen or alkyl of 1–4 carbon atoms;

R′ is alkyl of 1–4 carbon atoms, cycloalkyl, phenyl, or alkyl substituted phenyl;

B is phenylene or a diradical of a fused aromatic nucleus having up to four benzene rings;

A_r is selected from the group consisting of naphthalene, anthracene, pyrene, perylene, julolidine, carbazole and their respective homologues;

x is 0 or 1;

y is 0 or 1; and

n is at least 2.

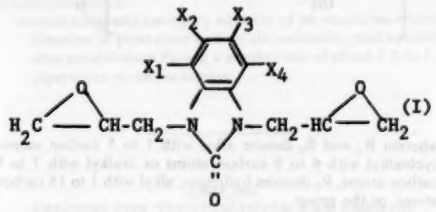
3,943,109

NEW DIGLYCIDYLBENZIMIDIAZOLONES

Daniel Porret, Binningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 319,268, Dec. 29, 1972, Pat. No. 3,843,674. This application June 24, 1974, Ser. No. 482,057
Int. Cl.² C08G *59/26*
U.S. Cl. 260—77.5 C **3 Claims**

1. A curable mixture which serves for the manufacture of moldings, consisting essentially of a diglycidyl compound of the formula



(I)

in which at least one X from amongst X_1, X_2, X_3 and X_4 denotes alkyl with 1 to 4 carbon atoms or halogen or two adjacent X together represent a fused benzene radical and the remaining X denote hydrogen; and a curing agent for epoxy resins.

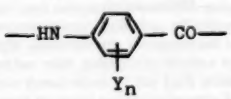
3,943,110

FIBER AND FILM-FORMING NUCLEARLY-HALOGENATED POLY(1,4-BENZAMIDES)

Paul Winthrop Morgan, West Chester, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 28, 1974, Ser. No. 473,661
Int. Cl.² C08G *69/12*
U.S. Cl. 260—78 A **5 Claims**

1. A polyamide consisting essentially of repeating units of the formula



wherein Y is halogen and n is an integer of from 1 to 4, the said polyamide having an inherent viscosity of at least 1.0, determined at 30°C using 0.5 gm of polymer in 100 ml of conc. 95–98% sulfuric acid.

3,943,111

PROCESS FOR PREPARING MODIFIED COPOLYMERS

Helmut Fritze, Wiesbaden, and Kurt Hultzsch, Wiesbaden-Biebrich, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Mar. 26, 1973, Ser. No. 345,116
Claims priority, application Germany, Mar. 29, 1972, 2215268; May 25, 1972, 2225351
Int. Cl. C08f *27/04*
U.S. Cl. 260—78.4 D **8 Claims**

1. A process for preparing modified copolymers while substantially reducing disintegration, which copolymers contain carboxylic groups to which cations of polyvalent metals are bound which comprises

I. reacting in a first stage a solution of

1. a copolymer containing a radical selected from the group consisting of (a) anhydride groups of vicinal carboxylic groups, (b) a combination of such anhy-

dride groups with vicinal carboxylic groups, (c) a combination of said anhydride groups with other radicals capable of forming vicinal carboxylic groups and (d) a combination of said anhydride groups with vicinal carboxylic groups and with other radicals capable of forming vicinal carboxylic groups, at a temperature of 50° to 180°C, with

2. at least one alcohol containing up to 2 hydroxy groups at least one of which being a non-tertiary hydroxy group to yield a reaction product in which at least a part of the anhydride groups is converted to semiester groups, and

II. reacting

3. the product thus obtained in the presence of water at a temperature in the range from 50° to 120°C with

4. a salt-forming compound of a polyvalent metal, the solvent present in the first stage of the reaction being compatible with said alcohol and partially miscible with water only to such an extent that two phases are formed therewith.

3,943,112
COPOLYMERS OF POLYHALOGENATED ISOCYANATES

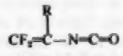
William J. Middleton, 02, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 176,709, Aug. 31, 1971, Pat. No. 3,816,495. This application Jan. 22, 1974, Ser. No. 435,494

Int. Cl.² C08F *200/00, 224/00, 216/12, 214/00*

U.S. Cl. 260—80.3 R **12 Claims**

1. A copolymer containing at least an effective crosslinking amount of a vinyl isocyanate of the formula



wherein R is fluorine, C_1–C_2 perfluoroalkyl, C_1–C_2 ω-chloroperfluoroalkyl or C_1–C_2 ω-hydroperfluoroalkyl and at least one fluorine-containing monomer selected from the group consisting of vinyl fluoride, vinylidene fluoride, trifluoroethylene, chlorotrifluoroethylene, tetrafluoroethylene, hexafluoropropylene, trifluoromethyl trifluorovinyl ether, and perfluoro (2-methylene-4-methyl-1,3-dioxolane).

3,943,113
POLYMER COMPOSITION OF A VINYL COMPOUND, A BIS (HYDROCARBYL)VINYLPHOSPHONATE AND AN ALLYL HALIDE

Jung Il Jin, Irvington, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 9, 1974, Ser. No. 496,234

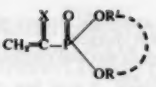
Int. Cl.² C08F *230/00*

U.S. Cl. 260—80.71 **14 Claims**

1. A copolymer having flame retardant properties which consists essentially of:

a. about 10 to 80% by weight of an alpha, beta-ethylenically unsaturated vinyl monomer selected from the group consisting of vinyl chloride, vinyl bromide, and vinyl acetate;

b. about 2 to 80% by weight of a bis(hydrocarbyl) vinylphosphonate having the structure



wherein X is selected from the group consisting of hydrogen, halogen, cyano, aryl, C_1–C_{18} alkyl and

wherein R and R′ are hydrocarbyl and hydrocarbyl groups containing non-interfering substituents consisting essentially of hydrogen and carbon and containing up to 18 carbon atoms; and

c. about 5% to 50% by weight of an allyl halide selected from the group consisting of allyl chloride and allyl bromide.

3,943,114
POLYMERS OF N-AMINOALKYL ACRYLAMIDES

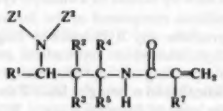
Donald Irvin Hoke, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 203,853, Dec. 1, 1971, Pat. No. 3,883,491, which is a division of Ser. No. 832,412, June 11, 1969, Pat. No. 3,666,810. This application Sept. 27, 1972, Ser. No. 292,564

Int. Cl.² C08F *3/90, 15/02*

U.S. Cl. 260—85.5 AM **8 Claims**

1. A polymer of a compound of the formula



wherein each of R^1, R^2 and R^3 is hydrogen or a hydrocarbon radical; each of R^4 and R^5 is a hydrocarbon radical; R^7 is hydrogen or a lower alkyl radical; and each of Z^1 and Z^2 is a lower alkyl or C_{3-8} cycloalkyl radical, or

is a heterocyclic radical.

3,943,115
METHOD FOR PREPARING FINELY DIVIDED ETHYLENE POLYMER PARTICLES

Minoru Kawaguchi, Yokohama; Yasuki Yamasaki, Chiba; Hideo Shimizu, Ichihara; Shinichi Taoka, Ichihara, and Yoshio Hayamizu, Ichihara, all of Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Mar. 18, 1975, Ser. No. 559,440

Claims priority, application Japan, Mar. 23, 1974, 49-32253; July 5, 1974, 49-76440

Int. Cl.² C08F *6/12*

U.S. Cl. 260—87.3 **17 Claims**

1. A method for preparing finely divided ethylene polymer particles, comprising:

1. charging a closed vessel having a stirrer with 1 part by weight of an ethylene polymer selected from the group consisting of polyethylenes, copolymers of ethylene and vinyl acetate and mixtures of two or more of the above-mentioned polymers, 1.2 to 5.0 parts by weight of an organic solvent capable of dissolving said ethylene polymer and water in an amount of 1 to 4 times that necessary

for producing an azeotropic mixture with said amount of said organic solvent charged;

2. stirring said charge to mix said ethylene polymer, organic solvent and water, and;
3. effecting, while stirring said mixture, the following operations:
   a. heating said mixture to a temperature not lower than the dissolving point beneath which point said ethylene polymer can not be completely dissolved in said amount of said organic solvent, while allowing said ethylene polymer to be dissolved in said organic solvent;
   b. cooling said mixture to a temperature of at least 25°C beneath said dissolving point of said ethylene polymer in said organic solvent but not lower than 0°C, and;
   c. evaporating said organic solvent and water from said mixture under a reduced pressure condition, while said ethylene polymer is allowed to deposit in the form of finely divided smoothly surfaced spherical particles from the mixture of said organic solvent and water.

3,943,116

METHOD FOR PREPARING HIGH CIS POLYALKENAMERS

Anthony J. Bell, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed June 21, 1974, Ser. No. 481,568

Int. Cl.² C08F 4/14, 4/52

U.S. Cl. 260—93.1 **8 Claims**

1. The method which comprises polymerizing a cycloolefin selected from the group consisting of cyclooctene and 1,5-cyclooctadiene to polyalkenamers having cis vinylene contents of at least 86% by means of a catalyst system comprising (A) an organosilicon compound of the formula $R_n{-}nSi(Y)_n$ wherein R represents any hydrocarbon fragment from the group of an alkyl, alkenyl or aryl radical and Y is selected from the group consisting of vinyl alkylidenyl, alkoxy, aryloxy and aralkoxy radicals and n being at least 2 and (B) a tungsten halide salt of the general formula $R_{m-n}WX_n$ wherein X represents chlorine or bromine and R is selected from the group consisting of alkoxy, aryloxy, haloalkoxy, alkaryloxy and acetyl acetonyl radicals *m* being 6 when X = Cl or 5 when X = Br and wherein *n'* is 3 to 6 inclusive when X = Cl or 3 to 5 inclusive when X = Br and (C) an organoaluminum compound of the formula

wherein R_1, R_2 and R_3 may independently represent an alkyl, aralkyl radical or a halogen atom, and wherein the molar ratio of (A)/(B) ranges from 0.1/1 to 3/1 and the molar ratio of (C)/(B) ranges from 1/1 to 10/1.

3,943,117

PROCESS FOR IMPROVING TALL OIL PITCH

Carlton G. Force, Mount Pleasant, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Dec. 2, 1974, Ser. No. 528,991

Int. Cl.² C09F 1/00

U.S. Cl. 260—97.5 **8 Claims**

1. A process for producing improved tall oil pitch which comprises,

saponifying an aqueous solution of tall oil pitch at a solids concentration of 5% to 99% with at least 0.00026% by weight of a water-soluble cationic amine soap catalyst and a slight amount more of a saponifying agent than is required to form soaps from the free fatty acids and rosin acids present in the pitch at a temperature of at least 50°C. to free the fatty acid soaps and rosin acid soaps from their esters.

3,943,118

METHOD OF ISOMERIZING FATTY ACIDS HAVING AN ISOLATED DIENE STRUCTURE AND DISPROPORTIONATING ROSIN ACIDS HAVING CONJUGATED DIENE STRUCTURE

Timo Pellervo Lehtinen, Oulu, Finland, assignor to Oulu Osakeyhtio, Oulu, Finland

Filed Oct. 26, 1973, Ser. No. 410,019

Claims priority, application Finland, Oct. 27, 1972, 2984/72; June 8, 1973, 1865/73

Int. Cl.² C09F 7/08, 7/00

U.S. Cl. 260—97.5 **19 Claims**

1. A method of producing a disproportioned and isomerized tall oil product, comprising heating a tall oil material containing rosin acids and fatty acids in the presence of 0.1–5% by weight sulphur and 0.01–0.4% by weight iodine at a temperature in the range 180° to 250°C., and subjecting the product obtained to an odor removal treatment.

3,943,119

TUBERCULIN ACTIVE PROTEINS AND PEPTIDES FROM THE CELLS OF TUBERCLE BACILLI

Toru Tsumita, and Seishi Kuwabara, both of Tokyo, Japan, assignors to Mitsui Pharmaceuticals, Incorporated, Tokyo, Japan

Continuation-in-part of Ser. No. 374,663, June 28, 1973, Pat. No. 3,888,837. This application Mar. 28, 1974, Ser. No. 455,798

Int. Cl.² C07C 103/52; C08H 1/00; C12B 1/00

U.S. Cl. 260—112.5 R **3 Claims**

1. A tuberculin active simple protein from Mycobacterium tuberculosis strain Aoyama B which is characterized by the following amino acid sequence:

```
   1  2  3  4  5  6  7  8  9  10 11 12 13 14 15 16 17 18 19 20
H2N-Arg-Leu-Leu-Asp-Asp-Thr-Pro-Glu-Val-Lys-Val-Leu-Gly- -Glu-
  21 22 23 24 25 26 27 28 29 30  50 51 52 53 54 55 56 57 58 59 60
Thr-Pro-Lys-Ala-Glu-Pro-Cys-Ile-Asp-Leu- -Tyr-Ala-Glu-Val-
  70 71 72 73 74  85 86 87 88 89
Thr-Phe-His-Glu-Ile-Cys-Arg- -Asn-Gly-Ser-Gln-Met- -Ala-
Thr-Val-Ala-Lys-COOH
```

wherein Asn and Gln represent asparagine residue and glutamine residue, respectively, and the remaining abbreviations represent the usual meanings and wherein the cysteine residues at positions 27 and 59 form one intra-chain disulfide bridge, said protein also being characterized by the following amino acid composition per molecule:

Lys 4, His 1, Arg. 4, Cys 2, Asp 11 (containing one asparagine residue), Thr 5, Ser 4, Glu 11 (containing one glutamine residue), Pro 5, Gly 7, Ala 11, Val 8, Met 1, Ile 4, Leu 7, Tyr 2 and Phe 2.

3,943,120

SUCCINIMIDO AZO DYESTUFFS

Richard Peter, and Hans-Joerg Angliker, both of Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

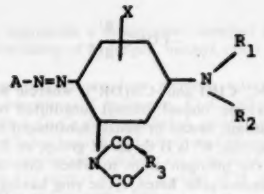
Continuation of Ser. No. 127,366, March 23, 1971, which is a continuation-in-part of Ser. No. 760,081, Sept. 18, 1968, abandoned. This application Feb. 4, 1974, Ser. No. 439,651

Claims priority, application Switzerland, Sept. 19, 1967, 13159/67

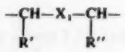
Int. Cl.² C09B 29/08, 29/36; D06P 3/58, 3/60

U.S. Cl. 260—152 **10 Claims**

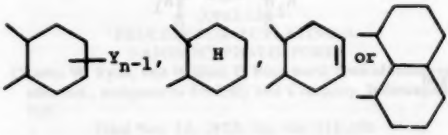
1. A water-insoluble azo dyestuff of the formula



in which A represents phenyl or phenyl substituted by chloro, bromo, hydroxyl, cyan, thiocyanato, nitro, alkyl of 1 to 2 carbon atoms, trifluoromethyl, alkoxy of 1 to 2 carbon atoms, formyl, acetyl, propionyl, benzoyl, methylbenzoyl, (methyl or ethyl) oxycarbonylbenzoyl, acetylamino, propionylamino, benzoylamino, methoxycarbonylamino, ethoxycarbonylamino, methylsulfonyl, ethylsulfonyl, propylsulfonyl, chloromethylsulfonyl, aminosulfonyl, alkylated aminosulfonyl containing 1 to 2 carbon atoms, (hydroxyethyl)-aminosulfonyl, cyanoethylaminosulfonyl, β-chloroethylsulfonylamino, cyclohexylaminosulfonyl, phenylaminosulfonyl, (chloro-, methyl-, nitro- or methoxy-phenyl) aminosulfonyl, benzylaminosulfonyl, N-piperidylsulfonyl, N-morpholinosulfonyl, alkylsulfonyloxy containing 1 to 3 carbon atoms, ethoxyethylsulfonyloxy, cyclohexylsulfonyloxy, chloromethylsulfonyloxy, cyanethylsulfonyloxy, phenylsulfonyloxy, chlorophenylsulfonyloxy, aminosulfonyloxy, alkylaminosulfonyloxy containing 1 to 4 carbon atoms, phenylaminosulfonyloxy, N-phenyl-N-ethyl-aminosulfonyloxy, phenyl, acetylaminophenyl, trimethylammonium, phenoxy, phenylazo or nitrophenylazo, R_1 is hydrogen, alkyl containing 1 to 10 carbon atoms or alkyl containing 1 to 10 carbon atoms substituted by a member selected from the group consisting of chlorine, bromine, phenyl, alkanoyloxy of 1 to 10 carbon atoms, alkanoylamino of 1 to 10 carbon atoms, hydroxy, cyano, alkoxy of 1 to 4 carbon atoms, benzoyl, cyanethoxy, alkylcarbamoyl where the alkyl contains 2 to 7 carbon atoms, aminocarbonyl and alkyloxycarbonyloxy in which alkyl contains 2 to 7 carbon atoms, R_2 is alkyl containing 1 to 10 carbon atoms or alkyl containing 1 to 10 carbon atoms substituted by a member selected from the group consisting of chlorine, bromine, phenyl, alkanoyloxy of 1 to 10 carbon atoms, hydroxy, cyano, alkylcarbamoyl in which alkyl contains 2 to 7 carbon atoms, aminocarbonyl and alkyloxycarbonyloxy in which alkyl contains 2 to 7 carbon atoms, alkoxy of 1–4 carbon atoms, benzoyl and cyanethoxy, R_3 represents $-CH_2-X_1-CH_2-$ wherein X_1 is a direct bond, a double bond, $-CH_2-$, $-O-$, $-S-$, $-NH-$, $-N(CH_3)-$, or



where R′ and R″ are hydrogen or a group as defined below and where one or both of R′ and R″ is chlorine, an alkyl radical of between 1 to 12 carbon atoms,



wherein Y is chlorine, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms, nitro or NH_2 and $n = 1$, 2 or 3, and X represents hydrogen, alkyl of up to 3 carbon atoms, alkoxy of up to two carbon atoms, phenoxy or phenylmercapto.

3,943,121
MONOAZO COMPOUNDS FROM 3-AMINOBENZISOTHIAZOLES AND SUBSTITUTED α-NAPHTHYLAMINE COUPLERS

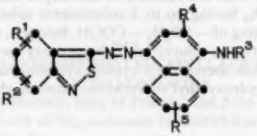
Ronald J. Maner, and Max A. Weaver, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 260,083, June 6, 1972, abandoned. This application Mar. 19, 1974, Ser. No. 452,893

Int. Cl.² C09B *29/06, 29/36*

U.S. Cl. 260—158 **6 Claims**

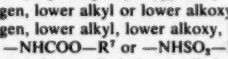
1. A compound having the formula



wherein

R^1 and R^2 each is hydrogen, lower alkyl, lower alkoxy, chlorine or bromine;

R^3 is cyclohexyl; lower alkyl cyclohexyl; aryl; alkyl of one to about six carbon atoms substituted with hydroxy, lower alkoxy, lower cyanoalkoxy, lower hydroxyalkoxy, cyano, halogen, aryl, aryloxy, cyclohexyl, lower alkylcyclohexyl, hydroxymethylcyclohexyl, R^6—$CONHCH_2$-cyclohexyl, $R^7OCONHCH_2$-cyclohexyl, $R^7SO_2N(R^8)CH_2$-cyclohexyl, pyrrolidinono, lower alkylpyrrolidinono, phthalimidino, $-N(R^8)CO-R^6$, $-NHCOO-R^7$, $-N(R^8)SO_2R^7$, $-OOC-R^6$, $-COO-R^7$, $-CONR^9R^{10}$,



or $-CH_2CH(R^{11})-[OCH_2CH(R^{11})]_n-R^{12}$;

R^4 is hydrogen, lower alkyl or lower alkoxy; and

R^5 is hydrogen, lower alkyl, lower alkoxy, hydroxy, $-NHCO-R^6$, $-NHCOO-R^7$ or $-NHSO_2-R^7$, in which

R^6 is hydrogen; lower alkyl; lower alkyl substituted with halogen, hydroxy, lower alkoxy or aryl; aryl; lower alkylamino; or arylamino;

R^7 is lower alkyl;

R^8 is hydrogen or lower alkyl;

R^9 individually is hydrogen or lower alkyl;

R^{10} individually is hydrogen or lower alkyl;

R^9 and R^{10} in combination are pentamethylene or ethyleneoxyethylene;

R^{11} is hydrogen or methyl;

n is 1, 2 or 3; and

R^{12} is hydrogen or hydroxy; and

each aryl as well as the aryl moiety of each aryloxy and arylamino is phenyl or phenyl substituted with lower alkyl, lower hydroxyalkyl, lower alkoxy, or chlorine.

3,943,122
POLYAZO COMPOUNDS CONTAINING BENZHYDROL AS A COMPONENT

Andre Louis Sailer, and Pierre Frank, both of Saint Clair du Rhone, France, assignors to Pechiney Ugine Kuhlmann, Paris, France

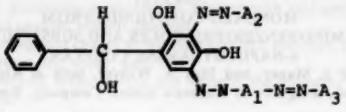
Filed Jan. 14, 1972, Ser. No. 217,950

Claims priority, application France, Jan. 14, 1971, 71.01106

Int. Cl.² D06P *1/39;* **C09B** *33/04, 33/18, 45/24*

U.S. Cl. 260—169 **5 Claims**

1. An azo dyestuff of the formula:



in which A_1 represents phenylene or naphthylene, A_2 and A_3 each represents phenyl, naphthyl or diphenylamine, A_1, A_2 and A_3 being the same or different with at least one of them containing at least one sulfonic or carboxylic acid substituent, A_1, A_2 and A_3 having up to 3 substituents selected from the group consisting of $-SO_3H$, $-COOH$, halogen, methyl, ethyl, hydroxy, methoxy, ethoxy, carboxymethoxy, acetylamino or nitro, or the salt thereof with cyclohexylamine, dicyclohexylamine or 2'-hydroxyethyl trimethylammonium chloride.

3,943,123

NOVEL BETA-LACTAMS AND NOVEL PROCESS

Ajay K. Bose, Mountain Lakes, N.J., assignor to Koninklijke Nederlandsche Gist-En Spiritusfabriek N.V., Delft, Netherlands

Continuation of Ser. No. 139,231, April 30, 1971, abandoned. This application Feb. 14, 1974, Ser. No. 442,438

Int. Cl.[2] C07D *205/08, 405/04, 403/04*

U.S. Cl. 260—239 A 8 Claims

1. A β-lactam of the formula

wherein A and B are each selected from the group consisting of phenyl, phenyl lower alkyl of 1 to 7 alkyl carbon atoms and furyl with A or B being substituted with a carboxyl and the other group being optionally substituted with a member of the goup consisting of hydroxy, 1 to 2 lower alkoxy, nitro and diloweralkylamino, and Z is selected from the group consisting of lower alkoxy, phenoxy, phthalimido and $-N_3$.

3,943,124

CHEMICAL COMPOUNDS

Gordon Hanley Phillipps, 8 Sudbury Hill Close, Wembley, Middlesex, and Christopher Earle Newall, 138 Princes Ave., Acton, London W. 3, both of England

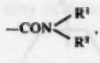
Continuation-in-part of Ser. Nos. 208,923, Dec. 16, 1971, and Ser. No. 369,277, June 12, 1973. This application June 20, 1974, Ser. No. 481,227

Claims priority, application United Kingdom, June 15, 1972, 28118/72; Dec. 17, 1970, 60070/70

Int. Cl.[2] C07J *17/00*

U.S. Cl. 260—239.55 R 28 Claims

1. A steroid of the androstane series having a 3α-hydroxy group, a 3β-hydrogen atom or methyl group, a 10-hydrogen atom or methyl group, two 11-hydrogen atoms or an 11-oxo group, a 17α-hydrogen atom, and a group at the 17β-position selected from the group consisting of



-COOR[3], -CN, -CHO and $-CH(OR^4)_2$ wherein R^1 is alkyl of 1–6 carbon atoms; phenyl; phenyl substituted by, alkoxy of 1–6 carbon atoms; benzyl or benzyl substituted by, alkoxy of 1–6 carbon atoms; R^2 is H or an R^1 group; or R^1 and R^2 together with the nitrogen atom to which they are attached represent a monocyclic heterocyclic ring having 5 or 6 ring members where R^1 and R^2 in said monocyclic heterocyclic ring are comprised of ring members selected from the group consisting of carbon atoms, carbon atoms and one nitrogen atom, carbon atoms and one oxygen atom and carbon atoms and one sulfur atom or such a ring substituted with alkyl of 1–6 carbon atoms; R^3 is alkyl of 1-10 carbon atoms; alkyl of 1–10 carbon atoms substituted with, hydroxy, lower alkanoyloxy of 1–6 carbon atoms, cyano, halo,

wherein R^1 and R^2 are as defined above except that R^1 may be H, ethoxycarbonyl, alkoxy of 1–10 carbon atoms, monocyclic nitrogen heterocyclic; phenyl; phenyl substituted with alkoxy of 1–6 carbon atoms or halogen, phenylalkyl having 1–6 carbon atoms in the alkyl moiety, monocyclic aralkyl having 1–6 carbon atoms in the alkyl moiety substituted in the monocyclic aryl portion with, alkoxy of 1–6 carbon atoms; R^4 is alkyl of 1–6 carbon atoms or $(OR^4)_2$ represents alkylene-dioxy of 2–6 carbon atoms; there being a hydrogen atom in the 5α-position and an oxo-group in the 11-position when there is a methoxycarbonyl, CHO or $-CH(OR^4)_2$ group in the 17β-position and the 3α-hydroxy steroid nucleus is saturated or has a double bond in the 1,2-position and is otherwise unsubstituted.

3,943,125

SUBSTITUTED TETRAAMINO HETEROCYCLIC COMPOUNDS, USEFUL IN THE PREPARATION OF SUBSTITUTED POLYBENZIMIDAZOLES AND POLY-IMIDAZOPYRROLONES

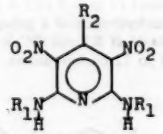
Arthur H. Gerber, University Hts., Ohio, assignor to Horizons Incorporated, a division of Horizons Research Incorporated, Cleveland, Ohio

Filed Jan. 31, 1974, Ser. No. 438,393

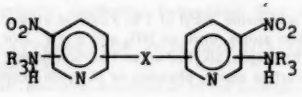
Int. Cl.[2] C07D *213/61, 213/74*

U.S. Cl. 260—240 D 6 Claims

1. 2,6-Di(substituted amino)-3,5-dinitropyridine compounds represented by a formula selected from the group consisting of

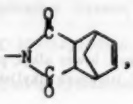


and



wherein R_2 represents a monovalent member selected from the group consisting of hydrogen, methyl, ethyl, propyl, butyl and pentyl;

R_1 represents a monovalent member selected from the group consisting of hydrogen, C_1-C_5 alkyl, substituted C_1-C_5 alkyl, C_2-C_5 alkenyl, phenyl, pyridyl, picolyl, quinolyl, substituted benzyl, and substituted phenyl wherein the substituents on said members are selected from the group consisting of methyl, phenyl, pyridyl, -CN, -COOH and its salts, $-SO_3$ and its salts, $-NH_2$,



$COOC_6H_5$, -SH, thioaryl, thioalkyl, $-CH{=}CHC_6H_5$, and N,N-dimethylamino; with the proviso that not all three of the R_1 and R_2 members can be H; and both of the R_1's need not be identical;

R_3 is a monovalent radical selected from the group consisting of H and alkyl of 1 to 5 carbon atoms; and

x is a covalent bond or a divalent radical selected from the group consisting of alkylene of 1 to 3 carbon atoms, -S-, -O- and

where *m* is equal to 1 or 2; and each R_3NH- group is located ortho to a nitro group and the pyridyl rings containing the amino groups are joined via the 2,2′, 3,3′, or 2,3′ positions with the provisos that when X is a covalent bond both R_3's cannot be hydrogen when the pyridyl groups are joined 2,2′; and when X is

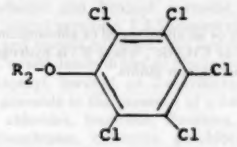
the pyridyl groups are joined 2,2′; and further that both of the R_3's need not be identical.

3,943,126
PROCESS FOR ACYLATING A 7-AMINOCEPHALOSPORIN

Charles W. Ryan, and William B. Blanchard, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 15, 1973, Ser. No. 416,296
Int. Cl.² C07D *501/06*
U.S. Cl. 260—243 C **11 Claims**

1. A process for acylating a 7-aminocephalosporin which comprises the step of reacting said 7-aminocephalosporin or a silylated derivative thereof with a pentachlorophenyl ester of the formula



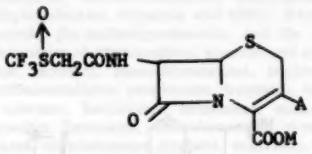
in which R_2 is sydnone-3-acetyl or 1-tetrazoleacetyl.

3,943,127
7-TRIFLUOROMETHYLSULFINYLACETAMIDO CEPHALOSPORINS

Robert M. DeMarinis, King of Prussia, and John R. E. Hoover, Glenside, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 371,081, June 18, 1973, Pat. No. 3,880,848. This application Jan. 20, 1975, Ser. No. 542,336
Int. Cl.² C07D *501/28*
U.S. Cl. 260—243 C **2 Claims**

1. A compound of the formula:



in which:

M is hydrogen or an alkali metal or ammonium cation; and

A is acetoxymethyl, methyl or pyridiniummethyl [, pyridiniummethyl, CH_2SHet, CH_2SR' or CH_2OR', where R′ is hydrogen or alkyl of from one to four carbon atoms; and

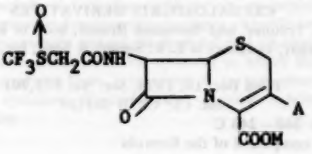
Het is a five or six membered heterocyclic group containing carbon and one to four atoms selected from the group consisting of N, O and S, each such group being unsubstituted or substituted with from one to two groups selected from lower alkyl, alkoxyalkyl, and trifluoromethyl, each alkyl or alkoxy having from one to four carbon atoms, or an N-oxide thereof].

3,943,128
7-TRIFLUOROMETHYLSULFINYLACETAMIDO CEPHALOSPORINS

Robert M. DeMarinis, King of Prussia, and John R. E. Hoover, Glenside, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 371,081, June 18, 1973, Pat. No. 3,880,848. This application Jan. 20, 1975, Ser. No. 542,337
Int. Cl.² C07D *501/36*
U.S. Cl. 260—243 C **5 Claims**

1. A compound of the formula:



in which:

M is hydrogen or an alkali metal or ammonium cation; and

A is CH_2SR' or CH_2OR', where R' is hydrogen or alkyl of from one to four carbon atoms.

3,943,129

7-AMINO-3-(1,3,4-THIADIAZOLINYLTHIO-METHYL) CEPHALOSPORINS

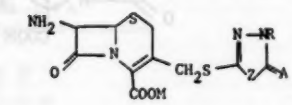
David Alan Berges, Audubon, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 306,507, Jan. 14, 1972, Pat. No. 3,868,369. This application Dec. 3, 1974, Ser. No. 529,142

Int. Cl.² C07D *501/36*

U.S. Cl. 260—243 C **3 Claims**

1. A compound of the formula



wherein Z is S;

A is O or S;

R is hydrogen or C_1-C_4 alkyl; and

M is hydrogen, 2,2,2-trichloroethyl, benzhydryl, t-butyl, p-nitrophenyl, p-methoxyphenyl, p-methoxybenzyl, or benzyloxymethyl.

3,943,130

[(THIOALKOXY)THIOCARBONYL]OXY]ACETYL CEPHALOSPORIN DERIVATIVES

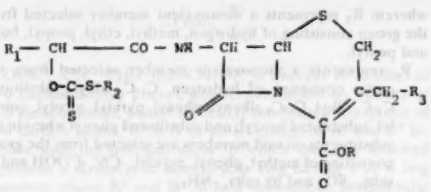
Uwe D. Treuner, and Hermann Breuer, both of Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 18, 1974, Ser. No. 533,901

Int. Cl.² C07D *501/20*

U.S. Cl. 260—243 C **10 Claims**

1. A compound of the formula



wherein R is hydrogen, lower alkyl, phenyl-lower alkyl, tri(-lower alkyl) stannyl, tri(lower alkyl)silyl,

alkali metal, alkaline earth metal or (lower alkyl)amine; R_1 is hydrogen, lower alkyl, phenyl, R_5-thienyl, R_5-furyl or R_5-pyridyl; R_2 is lower alkyl or phenyl-lower alkyl; R_3 is hydrogen or lower alkanoyloxy; R_4 is lower alkyl, phenyl or phenyl-lower alkyl; and R_5 is hydrogen or lower alkyl.

3,943,131

TRIFLUOROMETHYLMERCAPTOACETAMIDOCEPHALOSPORINS

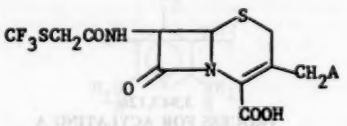
Robert M. De Marinis, King of Prussia, and John R. E. Hoover, Glenside, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 273,571, July 20, 1972, Pat. No. 3,828,037. This application Apr. 22, 1974, Ser. No. 463,085

Int. Cl.² A61K *31/54*

U.S. Cl. 424—246 **7 Claims**

1. A pharmaceutical composition comprising an antibacterially effective amount of the compound of the formula



in which:

A is S-Het;

Het is a 5 or 6 membered heterocyclic ring containing 1–4 hetero atoms selected from the group consisting of N, O and S and being unsubstituted or substituted with one or two groups selected from the group consisting of alkyl, alkoxy, alkylthio, each alkyl residue being one to four carbon atoms; C_5–C_4 cycloalkyl, halogen, hydroxy, mercapto, trifluoromethyl and NR_2; and

R is hydrogen or $C_1$14 C_8 alkyl, or a pharmaceutically acceptable salt thereof and sterile water or sterile saline as carrier therefor.

3,943,132

PROCESS FOR THE PREPARATION OF HYDRAZONES

Jean-Pierre Schirmann, Brignais; Henri Mathais, Ste. Foy-les-Lyon; Pierre Tellier, Oullins, and Francis Weiss, Pierre-Benite, all of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Oct. 15, 1973, Ser. No. 406,467

Claims priority, application France, Oct. 16, 1972, 72.36505

Int. Cl.² C07C *109/14, 109/16, 109/18*

U.S. Cl. 260—247.5 R 2 Claims

1. A method for preparing hydrazones which comprises reacting

a. ammonia;

b. an amine selected from methylamine, dimethylamine, ethylamine, diethylamine, n-propylamine, isopropylamine, n-butylamine, di-n-butylamine, t-butylamine, an amylamine, cyclohexylamine, dicyclohexylamine, n-dodecylamine, mono- and di- ethanoloamines, 2-methoxyethylamine, morpholine, pyrrolidine, piperidine, β-aminopropionitrile, β-aminopropionamide, aniline, a toluidine, mono- and dichloro-anilines and -toluidines, a bromoaniline, a fluoro-aniline, nitro- and diniutro-anilines and -toluidines, and anisidine, a trifluoromethylaniline, anthranilic acid, sulphanilic acid, diphenylamine, a naphthylamine and an aminopyridine;

c. carbonyl compound selected from formaldehyde, acetaldehyde, propionaldehyde, butyraldehyde, isobutyraldehyde, n-pentanal, pivalaldehyde, oenanthal, 2-ethylhexanol, Δ-3-tetrahydrobenzaldehyde, hexahydrobenzaldehyde, 5-norbornene, 2-carboxyaldehyde, tetrahydropyran-2-carboxyaldehyde, benzaldehyde, a monochlorobenzaldehyde, p-nitrobenzaldehyde, β-chloropropionaldehyde, β-methoxypropionaldehyde, 4-cyano-2,2-dimethylbutyraldehyde acetone, 2-butanone, 2-pentanone, 3-pentanone, 3-pentanone, methylisopropylketone, methylisobutylketone, ethylamylketone, methylcyclohexylketone, acetophenone, benzophenone, cyclobutanone, cyclopentanone, cyclohexanone, a methylcyclohexanone, 2,4-dimethylcyclohexanone, 3,3,5-trimethylcyclohexanone, isophorone, cycloheptanone, cyclooctanone, cyclodecanone and cyclododecanone, and mixtures thereof; and

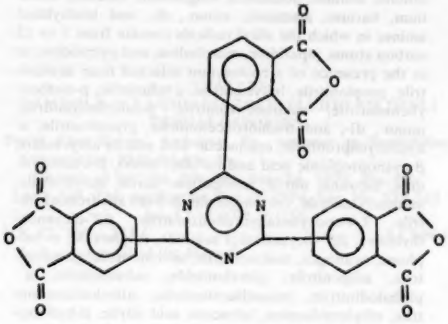
d. a peroxide compound selected from (i) the percarboxylic acids of formic, acetic, propionic, butyric, isobutyric, valeric, isolvaleric, pivalic, hexanoic, heptanoic, octanoic, αα′-dimethyloctanoic, lauric, palmitic, stearic, hexahydrobenzoic, trifluoroacetic, β-chloropropionic, β-methoxypropionic, ε-hydroxycaproic, benzoic and its chlorine, bromine, fluorine, methoxyl, nitro, and trifluoro-methyl derivatives, a toluic, succinic, glutaric, adipic, crotonic, maleic, fumaric and phthalic acids; (ii) acetyl, monochloroacetyl, trifluoroacetyl, propionyl, β-chloropropionyl, β-methoxypropionyl, β-carboxypropionyl, n-butyryl, perfluoro-n-butyryl, isobutyryl, perfluorosobutyryl, crotonyl, valeryl, isovaleryl, pivaloyl, hexanoyl, heptanoyl, octanoyl, 2-ethylhexanoyl, noanoyl, decanoyl, lauroyl, myristoyl, palmitoyl, stearyl, cyclohexanecarbonyl, norbornane-2 carbonyl, benzoyl, o-toluyl-m-chlorobenzoyl, p-chlorobenzoyl, p-methoxybenzoyl, p-nitro-benzyol, m-trifluoromethyl-benzoyl, p-phenyl-benzoyl, o-carboxyl-benzoyl, a naphthoyl, 2-furoyl and nicotinoyl peroxides and mixed acetyl and benzoyl peroxides, acetyl and butyryl peroxides, isobutyryl, and benzoyl peroxides, acetyl and lauroyl peroxides and stearyl and benzoyl peroxides; (iii) polymeric peroxides and mixed peroxides of oxalic, succinic, glutaric, adipic, pimelic, dodecanedioic, 1,2- or 3,4-cyclohexane dicarboxylic, o-phthalic, isophthalic, and terephthalic acids; (iv) isopropoxycarbonyl and benzoyl peroxide, methoxycarbonyl and lauroyl peroxide, 3,3,5-trimethylcyclohexyloxycarbonyl and lauroyl peroxide, and isopropyl peroxydicarbonate; mixed dianhydrides or diperoxy-carbonic and benzoyl, caproyl, lawcoyl, or 2-ethylhexanoyl; and (v) hydrogen peroxide in the presence of a catalyst selected from the chlorides, bromides, fluorides, nitrates, sulphates, phosphtates, chlorates, perchlorates, borates, carbonates, formiates, acetates, propionates, butyrates, isobutyrates, octanoates, benzoates, methanesulphonates, benzenesulphonates, and p-toluenesulphonates of lithium, sodium, potassium, magnesium, calcium, strontium, barium, ammonia, mono-, di-, and trialkylated amines in which the alkyl radicals contain from 1 to 12 carbon atoms, piperidine, morpholine, and pyrrolidine, or in the presence of a co-reactant selected from acetonitrile, propionitrile, butyronitrile, a tolunitrile, p-methoxybenzonitrile, chlorobenzonitrile, p-nitrobenzonitrile, mono-, di-, and trichloroacetonitrile, glycolonitrile, ε-hydroxycapronitrile, cyanacetic acid and its alkyl esters, β-cyanopropionic acid and its alkyl esters, β-cyanopyridine, nicotinic nitrile, isonicotinic nitrile, acrylonitrile, methacrylonitrile, crotononitrile, Δ-3-tetrahydrobenzonitrile, 3,4-epoxyhexahydrobenzonitrile, ββ′-dicyanoethylether, ββ′-dicyanoethyl sulphide, sulphoxide, or sulphone, cyanogen, malononitrile, succinontrile, glutaronitrile, adiponitrile, pimelonitride, suberonitrile, a phthalodinitrile, iminodiacetonitrile, nitrolotriacetonitrile, ethylenediamine, tetracetic acid nitrile, β-hydroxypropionitrile, βm-methoxyproionitrile, and the cyanoethyl derivatives of ethyleneglycol, glycerol, and sorbitol; formiates, acetates, monochloracetates, trichloroacetates, trifluoroacetates, propionates, butyrates, isobutyrates, valerates, hexanoates, octanoates, nonanoates, dodecanoates, benzoates, chlorobenzoates, p-methoxybenzoates, nitrobenzoates, oxalates, malonates, succinates, glutarates, adipates, pimelates, butane-1,2,4-tricarboxylates, o-phthalates, isophthalates, terephthalates, trimellitates, pyromellitates, β-hydroxypropionates, tartrates, and citrates of methanol, ethanol, n-propanol, isopropanol, n-butanol, isobutanol, 2-butanol, tertiary butanol, an amyl alcohol, n-hexanol, n-heptanol, n-octanol, 2-ethylhexanol, n-dodecanol, cyclohexanol, methylcyclohexanol, allyl alcohol, crotyl alcohol, Δ-3-tetrahydrobenzyl alcohol, benzyl alcohol, 2-methoxyethanol, 3-methoxypropanol, 2-ethoxyethanol, ethyleneglycol, propyleneglycol, glycerol, 1,1,1-trimethylolethane, pentaerythritol, sorbitol, phenol and its chlorine, bromine, nitro, and methoxyl derivatives, cresols, pyroatechlol; resorcinol and hydroquinone, β-propiolactone, Δ-butyrolactone, δ-valerolactone, ε-caprolactone, and their alkyl homoloques, formamides, monochloroacetamie, monobromoacetamide, dichloroacetamide, trichloroacetamide, trifluoroacetamide, β-chloropropionamide, αα-dichloropropionamide, α-bromopropionamide, perfluorobutyramide, glycolamide, lactamide, phenylacetamide and its derivatives halogenated in the core, diphenylacetamide, benzamide, o-toluamide, m-tolyamide, a chlorobenzamide, a bromobenzamide, a fluorobenzamide, perfluorobenzamide, a nitrobenzamide, salicylamide, p-hydroxybenzamide, the amic acids, diamides, and imides of oxalic, malonic, succinic, αα-dichlorosuccinic, malic, tartric, maleic, citric, itaconic, citraconic, o-phthalic, isophthalic, terephthalic, trimellitic, pyromellitic, and tetrachloro-o-phthalic acids; and the cyanides, cyanates, and thiocyanates of ammonium, alkali metals, and alkaline earth metals, magnesium and zinc, potassium ferrocyanide cyanogen chloride and bromide, cyanamide and its alkali metal and alkaline earth metal salts, the lower alkyl cyanates in which the alkyl group contains from 1 to about 6 carbon atoms, the phenyl cyanates, dicyandiamide, cyanuric halides, and melamine.

3,943,133
S-TRIAZINE HEXACARBOXYLIC ACIDS AND TRIANHYDRIDES

Raymond Seltzer, New City, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 13, 1975, Ser. No. 549,632
Int. Cl.² C07D *251/24*
U.S. Cl. 260—248 CS 5 Claims

1. An s-triazine trianhydride having the formula



3,943,134
PROCESS FOR PREPARING ACETONIN

Shigeo Kajiyama; Takamitsu Kobayashi, and Keiro Yoshizue, all of Kamakura, Japan, assignors to Sankyo Company Limited, Japan

Filed Oct. 18, 1974, Ser. No. 515,815
Claims priority, application Japan, Nov. 8, 1973, 48-125753; May 22, 1974, 49-57541
Int. Cl.² C07D *239/04*
U.S. Cl. 260—251 R 8 Claims

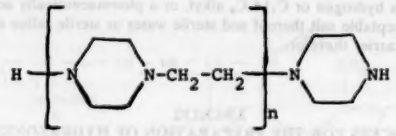
1. A process for the preparation of acetonin by reacting acetone with ammonia in the presence of an ammonium halide catalyst and in the additional presence of from 0.01 to 0.5 mole & based on the acetone of a promoter different from said catalyst and selected from the group consisting of bromine, iodine, iodine trichloride, ammonium iodide, alkali metal iodides, hydroiodides of aliphatic amines having from 1 to 12 carbon atoms, ammonium sulfide, ammonium rhodanide, ammonium bromide, ammonium nitrate, lithium cyanide, lithium rhodanide, lithium bromide, lithium nitrate, haloacetic acids, methanesulfonic acid, benzenesulfonic acid, p-toluensulfonic acid, ammonium formate, ammonium halocacetates, ammonium methanesulfonate, ammonium benzenesulfonate and ammonium p-toluenesulfonate.

3,943,135
OLIGOETHYLENEPIPERAZINES

Kouki Fujii, Yokohama, Japan, assignor to Sanraku-Ocean Co., Ltd., Tokyo, Japan

Filed Sept. 12, 1973, Ser. No. 396,396
Claims priority, application Japan, Sept. 13, 1972, 47-91179
Int. Cl.² C07D *295/12*
U.S. Cl. 260—268 PL 9 Claims

1. A compound selected from the group consisting of oligoethylenepiperazines of the formula



wherein *n* is a positive integer of 2 through 7 inclusive, the acid addition salts thereof and the quaternary salts thereof wherein at least one tertiary amino group is in quaternary form.

3,943,136
PROCESS FOR PREPARING 3,3-THIOBIS (2-METHOXY--AZABENZANTHRONE

Giuseppe Ribaldone, Gallarate, Italy, assignor to Montedison S.p.A.,, Milan, Italy

Filed Aug. 21, 1974, Ser. No. 499,416
Claims priority, application Italy, Aug. 22, 1973, 28086/73
Int. Cl.² C07D *221/18*
U.S. Cl. 260—272 8 Claims

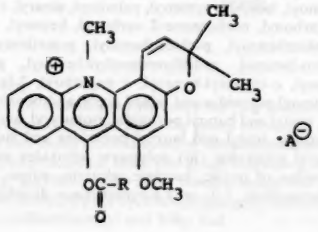
1. A process for preparing 3,3-thiobis [2-methoxy-1-azabenzanthrone], comprising reacting 2-methoxy-1-azabenzanthrone with sulfur chlorides in inert solvents selected from the group consisting of chlorinated saturated aliphatic hydrocarbons $C_1 - C_3$, dimethylformamide and nitrobenzene, at a temperature of from 40°to 100°C.

3,943,137
ACRONYCINE DERIVATIVES

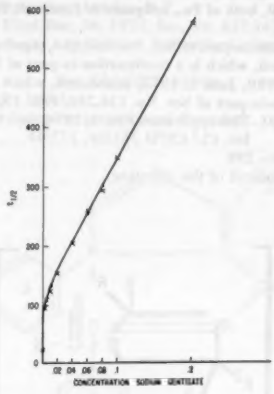
Takeru Higuchi; Arnold J. Repta, and David W. A. Bourne, all of Lawrence, Kans., assignors to University of Kansas Endowment Association, Lawrence, Kans.

Filed July 9, 1973, Ser. No. 377,401
Int. Cl.² C07D *491/04*
U.S. Cl. 260—279 R 10 Claims

1. An acronycine compound of the formula:



wherein R is straight or branched chain lower alkyl or halo alkyl having from 1 to 8 carbon atoms or phenyl or naphthyl,



alkaryl or aralkyl wherein the aryl thereof is phenyl or naphthyl and the alkyl thereof is as above defined and A is a pharmaceutically acceptable anion of a strong quaternizing acid.

3,943,138

PROCESS FOR UNIFORMLY DRAWING POLYETHYLENE TEREPHTHALATE FILAMENTS TO FORM HIGH SHRINKAGE FIBERS

Geoffrey Marshall, and Eric Ivan Riseley, both of Harrogate, England, assignors to Imperial Chemicl Industries, Ltd., London, England

Filed Sept. 11, 1972, Ser. No. 288,213

Claims priority, application United Kingdom, Sept. 22, 1971, 44202/71

The portion of the term of this patent subsequent to Mar. 30, 1993, has been disclaimed.

Int. Cl.² B29C *17/02*

U.S. Cl. 264—290 T **10 Claims**

1. A process for uniformly drawing a tow of poly(ethyleneterephthalate) filaments to form high shrinkage fibers comprising passing a tow at least partly around the peripheries of a plurality of feed rolls in series and a plurality of draw rolls in series the latter rotating at a higher peripheral speed, characterised in that the tow in contact with more than one of the feed rolls is sprayed with a saturating amount of aqueous liquid at a temperature of 60° - 80°C., the filaments comprising the undrawn tow have an intrinsic viscosity of 0.3 to 0.75 and a mean birefringence of 2×10^{-3} to 9×10^{-3} and a draw ratio of 2.0:1 to 3.3:1 is applied such as to give drawn filaments having an initial shrinkage in 70°C. water under a load of 0.011 grams per decitex of at least 5%.

3,943,139

PROCESS FOR THE MANUFACTURE OF TRIACETONE-MINE

Ivan Orban, and Jean Rody, both of Basel, Switzerland, assignors to CIBA-GEIGY Corporation, Ardsley, N.Y.

Filed Oct. 4, 1973, Ser. No. 403,360

Claims priority, application Switzerland, Oct. 20, 1972, 15425/72; July 5, 1973, 9849/73

Int. Cl.² C07D *211/02*

U.S. Cl. 260—293.89 **12 Claims**

1. Process for the manufacture of triacetone-amine by reaction of phorone with an equeous solution of ammonia, characterised in that the reaction is carried out under gaseous ammonia at not less than 0.2 bar excess pressure at 60° to 110°C and using a molar ratio of water to phorone of at least 1:1.

3,943,140

2,3,5,6-TETRACARBOXY-1,4-DIHYDROPYRIDINE DERIVATIVES

Friedrich Bossert; Horst Meyer, both of Wuppertal, and Wulf Vater, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

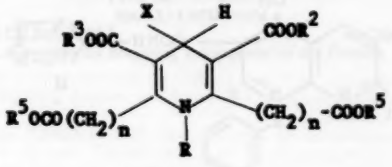
Division of Ser. No. 399,850, Sept. 24, 1973, Pat. No. 3,905,983. This application Nov. 15, 1974, Ser. No. 523,982

Claims priority, application Germany, Sept. 30, 1972, 2248150

Int. Cl.² C07D *213/55*

U.S. Cl. 260—295.5 R **10 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable nontoxic salt thereof, wherein

R is hydrogen, alkyl of up to 4 carbon atoms or alkenyl of up to 4 carbon atoms;

R^2 is alkyl of up to 6 carbon atoms, alkenyl of up to 6 carbon atoms, said alkyl substituted by hydroxyl, said alkenyl substituted by hydroxyl, said alkyl interrupted by oxygen or said alkenyl interrupted by oxygen;

R^3 is alkyl of up to 6 carbon atoms or alkenyl of up to 6 carbon atoms;

R^5 is hydrogen or alkyl of 1 to 4 carbon atoms;

n is 0, 1, 2 or 3; and

X is phenyl; phenyl substituted by one or two nitro groups; one cyano group; one azido group; one or two trifluoromethyl groups; one S(O)*n*alkyl wherein *n* is 0 or 2 and alkyl is of 1 to 4 carbon atoms; one or two alkyl groups of 1 to 4 carbon atoms; one, two or three alkoxy groups of 1 to 4 carbon atoms; one or two acetoxy groups; one or two amino groups; one or two acetylamino groups; one or two alkylamino groups of 1 to 4 carbon atoms; one or two dialkylamino groups of 1 to 4 carbon atoms in each alkyl group; one to three chlorine, bromine or fluorine atoms, or by one phenyl moiety; naphthyl; benzyl; or phenethyl.

3,943,141

TETRAZOLYL CONTAINING NAPHTHYRIDINE 3-CARBOXAMIDES

Gwynn Pennant Ellis, Cardiff, Wales; Ian Collins, London, England; David Martin Waters, London, England, and David Edmund Bays, London, England, assignors to Allen & Hanburys Limited, London, England

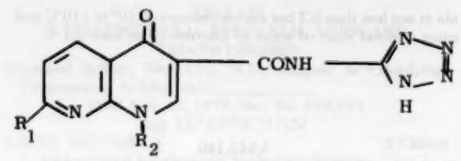
Filed Mar. 27, 1974, Ser. No. 455,072

Claims priority, application United Kingdom, Apr. 5, 1973, 16278/73

Int. Cl.² C07D *401/14*

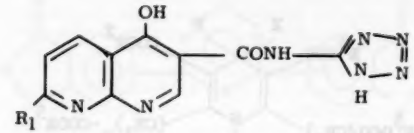
U.S. Cl. 260—295.5 B **35 Claims**

1. A compound of the formula



(I)

or the formula



(II)

in which

R_1 represents a hydrogen atom, a halogen atom, a C_{2-6} alkenyl or a C_{1-6} alkyl group; or a group OR_3 or NR_3R_4 where R_3 and R_4 which may be the same or different represent a hydrogen atom, a C_{2-6} alkenyl group, a C_{1-6} alkyl group or a C_1-C_6 alkyl group substituted by at least one hydroxy, C_{1-6} alkoxy group C_{1-6} alkanoyloxy, phenyl, amino, C_{1-6} alkylamimo, di C_{1-6}alkylamino, diphenyl C_{1-6}alkylamino or N,C_{1-6}alkyl, N-phenyl-C_{1-6}alkyl group, and R_2 has the same meaning as R_3; or a phramaceutically acceptable salt of a compound of formula I or II.

3,943,142

DYE INTERMEDIATES AND THEIR PREPARATION AND USE IN THE SYNTHESIS OF METHINE DYES

John R. Owen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 24, 1969, Ser. No. 793,900
Int. Cl.² C07D 277/64
U.S. Cl. 260—298 3 Claims

1. The method of preparing a monomeric methylene base which comprises adding up to 0.5 molar of a heterocyclic quaternary salt selected from the group consisting of a 2-methylthiazolium salt, a 2-methylbenzothiazolium salt, a 2-methylnaphthothiazolium salt, a 2-methylbenzoselenazolium salt, and a 2-methylnaphthoselenazolium salt to a mixture comprising one part tetramethylguanidine and one part of a liquid selected from benzene and ligroine, the temperature of said mixture being maintained at approximately 0°C. during the addition of said heterocyclic base, said reaction being conducted under anhydrous conditions and in the presence of sodium hydride in a concentration of up to about 0.5 molar.

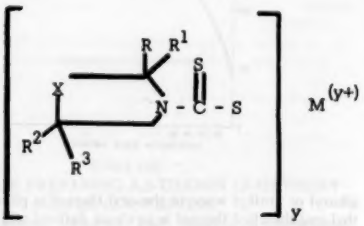
3,943,143

OXAZOLIDINE AND THIAZOLIDINE DERIVED CARBODITHIOATE COMPOSITIONS USEFUL AS VULCANIZATION ACCELERATORS

Ivan Christoff Popoff, Ambler, and Paul Gordon Haines, Lafayette Hill, both of Pa., assignors to Pennwalt Corporation, Phila., Pa.

Continuation-in-part of Ser. No. 356,034, April 30, 1973, abandoned, which is a continuation-in-part of Ser. No. 259,900, June 5, 1972, abandoned, which is a continuation-in-part of Ser. No. 116,250, Feb. 17, 1971, Pat. No. 3,674,701. This application Feb. 1, 1974, Ser. No. 438,819
Int. Cl.² C07D 263/04, 277/04
U.S. Cl. 260—299 12 Claims

1. A compound of the structure



where X is sulfur or oxygen, R, R^1, R^2 and R^3 are independently selected from the group consisting of hydrogen, lower alkyl having from 1 to 8 carbon atoms, CCl_3, phenyl and substituted phenyl wherein there are not more than two substituents selected from the group consisting of NR^4R^5, OH, OR^6 and Cl wherein R^4 and R^5 are independently selected from the group consisting of hydrogen and methyl, R^6 is a lower alkyl having from 1 to 8 carbon atoms, not more than one of R and R^1 is phenyl and not more than one of R^2 and R^3 is phenyl; M is selected from the group consisting of Zn, Cd, Cu and Fe; and y is an integer of 1 to 3 corresponding to the valency of M.

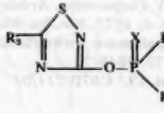
3,943,144

CERTAIN THIADIAZOLYL PHOSPHORUS ACID ESTERS

Willy Meyer, Basel; Beat Bühner, Binningen, and Dag Dawes, Pratteln, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 12, 1974, Ser. No. 460,623
Claims priority, application Switzerland, Apr. 19, 1973, 5758/73; Apr. 19, 1973, 5759/73; Feb. 18, 1974, 2218/74
Int. Cl.² C07D 285/08
U.S. Cl. 260—302 E 7 Claims

1. A compound of the formula



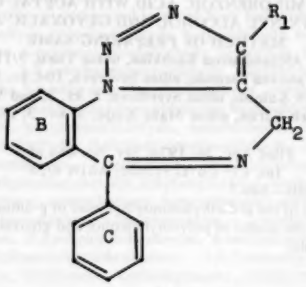
wherein R_1 and R_2 are independently methoxy or ethoxy, R_3 is an alkyl containing from 1 to 5 carbon atoms and X is sulfur.

3,943,145
6-PHENYL-4H-V-TRIAZOLO[1,5-A][1,4]BENZODIAZEPINES

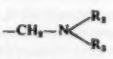
Andre Gagneux, Basel; Roland Heckendorn, Arlesheim, and Rene Meier, Buus, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 20, 1973, Ser. No. 427,167
Claims priority, application Switzerland, Dec. 29, 1972, 19079/72
Int. Cl.² C07D *487/04*
U.S. Cl. 260—308 A 23 Claims

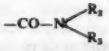
1. A new diazepine derivative of formula I



in which R_1 represents hydrogen, hydroxymethyl, formyl, carboxy, lower alkoxycarbonyl, or a group of formula Ia



in which R_2 and R_3 independently of each other represent hydrogen or lower alkyl, or a group of formula Ib



in which R_2 and R_3 have the meanings defined above, ring B is unsubstituted or substituted in the 8-position by halogen up to atomic number 35, trifluoromethyl or nitro, and ring C is unsubstituted or substituted by one substituent of the group of halogen atoms up to atomic number 35, trifluoromethyl and nitro, and its 5-oxide and its pharmaceutically acceptable addition salts with inorganic and organic acids.

3,943,146
SULFUR DIOXIDE - IMIDAZOLE ADDUCTS

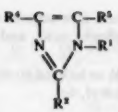
Norman P. Sweeny, North Oaks, Minn., and Karl Friedrich Thom, Cologne, Germany, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 262,557, June 14, 1972, Pat. No. 3,839,282. This application Feb. 26, 1974, Ser. No. 445,862
Int. Cl.² C07D *235/04*
U.S. Cl. 260—309.2 3 Claims

1. A compound of the formula

$$(Imid)_n \cdot SO_2$$

wherein
n is a number from 1 to 4, and
Imid is a compound of the formula



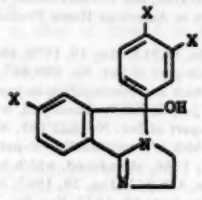
wherein R^1, R^2, R^4 and R^5 independently represent substituents selected from the group consisting of hydrogen; unsubstituted alkyl, alkenyl and alkinyl having 1 to 36 carbon atoms; phenyl; tolyl; xylyl and naphthyl, and together R^4 and R^5 can be the residue of a fused benzene ring.

3,943,147
PROCESS FOR IMIDAZO ISOINDOLES

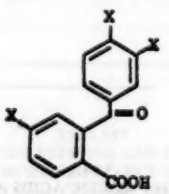
William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 342,879, March 19, 1973, abandoned, which is a continuation-in-part of Ser. No. 333,499, Feb. 20, 1973, abandoned. This application Oct. 26, 1973, Ser. No. 409,923
Int. Cl.² C07D *49/34*
U.S. Cl. 260—309.6 6 Claims

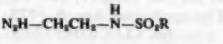
1. A process for preparing a compound of the formula



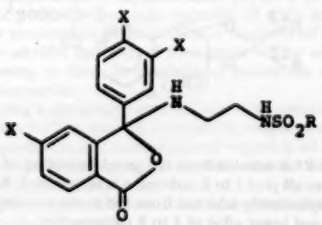
which comprises a first step of treating a compound of the formula



with a compound of the formula

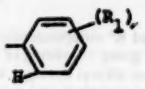


in inert solvent at a temperature of about 75°–115°C. to obtain an intermediate compound of the formula



treating said intermediate in a second step with concentrated sulfuric acid or phosphoric acid, and treating the resulting product with base,

where X represents H or halo of atomic weight 19 to 36, and R represents lower alkyl, or



where R_1 represents H, straight chain lower alkyl having 1 to 3 carbon atoms, or halo of atomic weight 35 to 80, and n is 1 or 2.

3,943,148

INDOLE FUSED HETEROCYCLIC DIURETIC COMPOUNDS

David R. Herbst, Wayne, and Herchel Smith, Bryn Mawr, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 38,913, May 19, 1970, abandoned, which is a continuation-in-part of Ser. No. 889,867, Dec. 22, 1969, abandoned, which is a continuation-in-part of Ser. No. 839,629, July 7, 1969, abandoned, which is a continuation-in-part of Ser. No. 632,105, April 19, 1967, abandoned, which is a continuation-in-part of Ser. No. 536,076, Feb. 21, 1966, abandoned, which is a continuation-n-part of Ser. No. 428,842, Jan. 28, 1965, abandoned. This application Aug. 10, 1972, Ser. No. 279,411

Int. Cl.[2] C07D *209/12, 209/14*

U.S. Cl. 260—326.5 B 6 Claims

1. 1,2,4,5,6,7,8,9-octahydro-3,9-dimethyl-3H-azecino[5,4-b]indole.

3,943,149

NAPHTHYLOXY ACETIC ACIDS AND RELATED COMPOUNDS

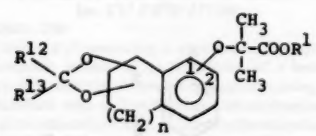
Frederic Peter Hauck, Somerville, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 305,619, Nov. 10, 1972, Pat. No. 3,906,032. This application Apr. 3, 1975, Ser. No. 564,928

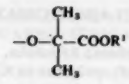
Int. Cl.[2] C07D *317/08*

U.S. Cl. 260—340.5 5 Claims

1. A compound of the formula:



wherein R^1 is selected from the group consisting of hydrogen and lower alkyl of 1 to 8 carbons; n is zero, 1 or 2; R^{12} and R^{13} are independently selected from the group consisting of hydrogen and lower alkyl of 1 to 8 carbons; the



side chain is in either the 1 or 2 position; and the pharmaceutically acceptable salts thereof.

3,943,150

SALT OF B-DIETHYLAMINOETHYL ESTER OF P-AMINOBENZOIC ACID WITH ACETAL OF POLYVINYL ALCOHOL AND GLYOXALIC AND METHOD OF PREPARING SAME

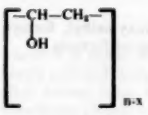
Nadezhda Alexandrovna Kashkina, ulitsa Talsu, 9/11, kv. 22; Milda Yanovna Pormale, ulitsa Suvorova, 104, kv. 10; Arvid Yanovich Kalnish, ulitsa Sverdlova, 8, kv. 3, and Yan Alexandrovich Surna, ulitsa Maza Kaiju, 3, kv. 3, all of Riga, U.S.S.R.

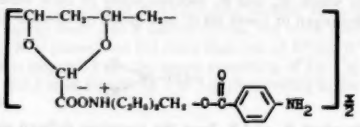
Filed Apr. 26, 1974, Ser. No. 464,669

Int. Cl.[2] C07D *319/06;* A01N *9/28*

U.S. Cl. 260—340.7 6 Claims

1. A salt of the β-diethylaminoethyl ester of p-aminobenzoic acid with the acetal of polyvinyl alcohol and glyoxalic acid of the formula:





wherein n is a degree of polymerization within the range of fron 100 to 1,200; x is a degree of substitution within the range of from 5 to 30 mol.%.

3,943,151

PROSTAGLANDIN INTERMEDIATES

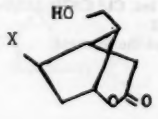
Elias J. Corey, Cambridge, Mass.; Jasjit S. Bindra, Groton, and Thomas K. Schaaf, Old Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Oct. 24, 1973, Ser. No. 409,068

Int. Cl.[2] C07D *309/30*

U.S. Cl. 260—343.2 R 3 Claims

1. A compound of the structure:



wherein X is chlorine, bromine or iodine.

3,943,152
METHOD FOR PREPARING AZINES

Pierre Tellier, Oullins; Jean-Pierre Schirmann, Brignais; Henri Mathais, Ste. Foy-les-Lyon, and Francis Weiss, Pierre Benite, all of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Mar. 14, 1973, Ser. No. 341,057
Claims priority, application France, Mar. 24, 1972, 72.10328
Int. Cl.[2] C07C *109/14*, *109/16*
U.S. Cl. 260—345.1 3 Claims

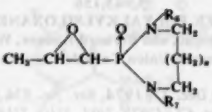
1. A method for preparing azines which consists of reacting
a. ammonia;
b. hydrogen peroxide;
c. a carbonyl compound selected from formaldehyde, acetaldehyde, propionaldehyde, butyraldehyde, isobutyraldehyde, n-pentanal, pivalaldehyde, oenanthal, 2-ethylhexanal, 3-Δ-tetrahydrobenzaldehyde, hexahydrobenzaldehyde, 5-norbornene-2-carboxaldehyde, tetrahydropyran-2-carboxaldehyde, benzaldehyde, monochlorobenzaldehyde, p-nitrobenzaldehyde, anisaldehyde, β-chloropropionaldehyde, β-methoxypropionaldehyde, 2-butanone, 2-pentanone, 3-pentanone, methylisopropylketone, methylisobutylketone, ethylamylketone, methylcyclohexylketone, acetophenone, benzophenone, cyclobutanone, cyclopentanone, cyclohexanone, 2-methylcyclohexanone, 3-methylcyclohexanone, 4-methylcyclohexanone, 2,4-dimethylcyclohexanone, 3,3,5-trimethylcyclohexanone, isophorone, cycloheptanone, cyclooctanone, cyclodecanone and cyclododecanone, and mixtures thereof; and
d. an amide or imide selected from formamide, monochloroacetamide, monobromoacetamide, dichloroacetamide, trichloroacetamide, trifluoroacetamide, α-chloropropionamide, β-chloropropionamide, α,α-dichloropropionamide, α,β-dichloropropionamide, α-bromopropionamide, β-bromopropionamide, α,β-dibromopropionamide, α-chloroisobutyramide, perfluorobutyramide, glycolamide, lactamide, β-hydroxypropionamide, glyceramide, α-hydroxy-β-chloropropionamide, α-chloro-β-hydroxypropionamide, glycolamide, phenylacetamide, chlorophenylacetamide, bromophenylacetamide, fluorophenylacetamide, nitrophenylacetamide, 2,4-dinitrophenylacetamide, diphenylacetamide, benzamide, o-toluamide, m-toluamide, chlorobenzamide, bromobenzamide, fluorobenzamide, iodobenzamide, pentachlorobenzamide, pentafluorobenzamide, nitrobenzamide, o-nitro-o'-methylbenzamide, salicylamide, m-hydroxybenzamide, p-hydroxybenzamide, o-methoxybenzamide, m-methoxybenzamide, and the amic acids, diamides and imides of oxalic, malonic, methylethylmalonic, diethylmalonic, succinic, α,α-dichlorosuccinic, maleic, tartaric, malic, α,α'-dichloroglutaric, α-hydroxyadipic, citric, itaconic, citraconic, o-phthalic, isophthalic, terephthalic, trimellitic, pyromellitic and tetrachloro-o-phthalic acids, and recovering the azine or mixture of azines from the reaction medium.

3,943,153
(−)(CIS-1,2-EPOXY PROPYL)PHOSPHONIC ACID AMIDES

Burton G. Christensen, Scotch Plains; Michael W. Fordice, Clark, and David B. R. Johnston, Warren, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. Nos. 758,149, Sept. 6, 1968, abandoned, and Ser. No. 760,684, Sept. 18, 1968, abandoned.
This application Aug. 8, 1969, Ser. No. 848,678
Int. Cl.[2] C07D *303/46*, *303/00*
U.S. Cl. 260—348 R 3 Claims

1. A (−) compound of the formula



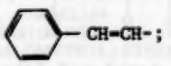
wherein R_6 and R_7 are loweralkyl and n is an integer from 0–2.

3,943,154
ACYLAMIDES OF BETA-CYANO-ETHENESULFONYL SUBSTITUTED AMINOARENES

Sven U. K. A. Richter, Boston, Mass.; Alexandros K. Tsolis, and Elefteria A. Tsolis, both of Athens, Greece, assignors to Sanitized Incorporated, New York, N.Y.

Filed Mar. 2, 1973, Ser. No. 337,637
Int. Cl.[2] C07C *121/70*
U.S. Cl. 260—397.6 3 Claims

1. An acylamide of a β-cyano-ethenesulfonyl substituted aminoarene having the formula $R' - SO_2 NH - Ar - SO_2 CH = CH - CN$
wherein R' is alkyl of from 1 to 16 carbon atoms; CH_2=CH—;



phenyl or phenyl substituted by alkyl of 1 to 16 carbon atoms, halogen, nitro, hydroxy, alkoxy of 1 to 16 carbon atoms, carbalkoxy of 1 to 2 carbon atoms, or carboxamide; bipheny or naphthyl; and
Ar is phenylene; phenylene substituted by nitro, chloro or methyl; biphenylene; or naphthylene.

3,943,155
SIMULTANEOUS REFINING AND DEWAXING OF CRUDE VEGETABLE OIL

Herbert Thomas Young, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 13, 1974, Ser. No. 469,267
Int. Cl.[2] C11B *3/04*, *3/06*
U.S. Cl. 260—424 11 Claims

1. A process for simultaneously removing the hydrophilic and waxy components from crude vegetable oil comprising the steps of:
a. gently agitating a crude vegetable oil at a temperature of from about 15°F to about 45°F;
b. contacting the agitated crude vegetable oil with at least one equivalent of aqueous alkali per mole of free fatty acid present in the crude vegetable oil while maintaining the temperature of the mixture of vegetable oil and aqueous alkali in the range of from about 15°F to about 45°F, thereby to form an emulsion of hydrophilic and waxy components;
c. mixing a phosphoric acid solution in an amount of from about 0.05 to about 0.2 percent by weight of said crude vegetable oil with said mixture of vegetable oil and aqueous alkali, thereby to break said emulsion into a two-phase system; and
d. separating the oil phase from the aqueous phase of said two-phase system.

3,943,156

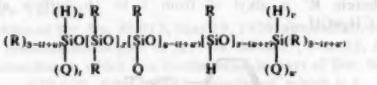
CYANO-ETHER POLYALKYLSILOXANE HYDRIDES

Bela Prokai, Mahopac, and Bernard Kanner, West Nyack, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 27, 1974, Ser. No. 536,874
Int. Cl.² C07F 7/04, 7/10, 7/18
U.S. Cl. 260—448.2 N 29 Claims

1. As a novel composition, a cyano-ether poly-alkylsiloxane hydride which comprises monofunctional siloxy units and difunctional siloxy units, an average of between about 2 and about 100 silicon-bonded cyano-bearing ether groups for every two moles of monofunctional units, said cyano-bearing ether groups having the formula, $-(O)_qR'OR''CN$, wherein q is zero or one, R′ is bivalent alkylene of 3 to 8 carbon atoms and R″ is bivalent alkylene of 2 to 4 carbon atoms, and an average of between about 2 and about 30 silicon-bonded hydrogen atoms for every two moles of monofunctional units, said monofunctional units having at least two alkyls bonded to the respective silicon atoms thereof and the difunctional units having at least one alkyl bonded to the respective silicon atoms thereof, the remaining group bonded to silicon of the respective monofunctional and difunctional siloxy units being alkyl, said cyano-bearing ether group or hydrogen.

2. A cyano-ether substituted polyalkylsiloxane hydride having an average composition within the formula,



wherein:

R is alkyl having from one to 10 carbon atoms;

Q is a cyano-bearing ether group having the formula, $-(O)_qR'OR''CN$, where q is zero or one, R′ is bivalent alkylene having from 3 to 8 carbon atoms and R″ is bivalent alkylene of 2 to 4 carbon atoms;

t, u, v, w, the sum $t+u$ and the sum $v+w$ are independently zero or one, and each of the sums $t+w$ and $u+v$ is independently zero, one or two;

x is zero or a positive number having an average value up to about 200;

y has an average value from about 2 to about 100; and

z has an average value from about 2 to about 30.

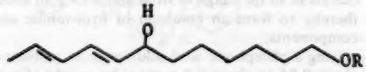
3,943,157

SYNTHESIS OF CODLING MOTH ATTRACTANT

Clive A. Henrick, and John B. Siddall, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 164,876, July 26, 1971, Pat. No. 3,818,049. This application Apr. 1, 1974, Ser. No. 456,504
Int. Cl.² C07F 7/04, 7/18
U.S. Cl. 260—448.8 R 3 Claims

1. A compound of the following formula:



wherein R is trimethylsilyl, t-butyldimethylsilyl, triethylsilyl, triphenylsilyl, diphenylmethylsily, or dimethylisopropylsilyl, said compound having a trans-8,trans-10-isomeric configuration.

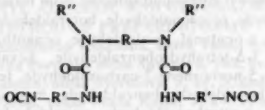
3,943,158

UREA DIISOCYANATE COMPOSITIONS

Werner Dietrich, Cologne; Kuno Wagner, Leverkusen, both of Germany, and Willi Eifler, New Martinsville, W. Va., assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 155,606, June 22, 1971, abandoned. This application Sept. 6, 1973, Ser. No. 394,710
Claims priority, application Germany, July 1, 1970, 2032547
Int. Cl.² C07C 119/042, 119/045, 119/048
U.S. Cl. 260—453 A 1 Claim

1. A stable homogeneous clear solution of an urea diisocyanate of the general formula



in a diisocyanate of the formula OCN—R′—NCO wherein R is an aliphatic, cycloaliphatic, aromatic or araliphatic hydrocarbon radical having up to 25 carbon atoms, R′ is an aliphatic, cycloaliphatic, aromatic or araliphatic hydrocarbon radical having up to 13 carbon atoms and R″ is an aliphatic hydrocarbon radical having 1 to 4 carbon atoms prepared by a process which comprises reacting in the absense of a solvent at a temperature from about −20°C to about 80°C an organic diisocyanate of the formula OCN—R′—NCO with a diamine of the formula R″—NH—R—NH—R″ such that the NCO/NH ratio is from 2.5 : 1 to 20 : 1.

3,943,159

PROCESS FOR THE PRODUCTION OF TELOMERS CONTAINING ISOCYANATE GROUPS

Bernd Quiring, Leverkusen, and Kuno Wagner, Leverkusen-Steinbuechel, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 9, 1973, Ser. No. 414,575
Claims priority, application Germany, Nov. 16, 1972, 2256104
Int. Cl.² C07C 118/00
U.S. Cl. 260—453 P 3 Claims

1. In the process for the production of an isocyanate group containing telomer by telomerization of an ethylenically unsaturated monomer as taxogen and an organic isocyanate as telogen with heating and optionally in the presence of high energy radiation and/or chemical radical-forming agents, the improvement which comprises conducting the telomerization in the presence of from about 0.1 to about 10% by weight based upon the ethylenically unsaturated monomer, of an organic compound containing at least one sulfhydryl group.

3,943,160

HEAT-STABLE CALCIUM-COMPATIBLE WATERFLOOD SURFACTANT

Robert Farmer, III; Jimmie B. Lawson, and Webster M. Sawyer, Jr., all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 17,898, March 9, 1970, Pat. No. 3,675,716. This application Feb. 14, 1972, Ser. No. 226,215
Int. Cl.² C07C 141/02
U.S. Cl. 260—458 2 Claims

1. A sterically-hindered branched-chain surfactant comprising a sulfate of a polyethoxylated alcohol in which the alcohol form of the alcohol portion has the formula:

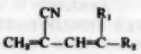
$$CH_3(CH_2)_{12\text{-}13}(OCH_2CH_2)_3OC(CH_3)_2CH_2OH.$$

3,943,161
PROCESS FOR PRODUCING CONJUGATED DIENES CONTAINING A CYANO GROUP

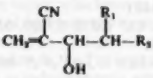
Yuji Nonaka; Keiichi Kihara; Toshio Hironaka, and Yasuhiro Oda, all of Shin-nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Japan

Filed Nov. 27, 1974, Ser. No. 527,653
Claims priority, application Japan, Nov. 27, 1973, 48-132195
Int. Cl.² C07C *120/00, 121/30, 121/52*
U.S. Cl. 260—465 K 7 Claims

1. A process for producing a conjugated diene containing a cyano group having the formula



wherein R_1 and R_2 are hydrogen, C_1 to C_{10} alkyl or phenyl which comprises dehydrating the 2-cyano-3-hydroxy-1-olefin compound of the formula



wherein R_1 and R_2 are as before at 50°–200°C under a reduced pressure of 1 to 600 mm Hg in the presence of an alkaline catalyst wherein the amount of said alkaline catalyst is 0.1–20 weight percent relative to said 2-cyano-3-hydroxy-1-olefin and said conjugated diene is continuously removed by distillation from the reaction system during reaction.

3,943,162
CYANOETHYLATION OF AROMATIC AMINES

Michael E. Brennan, and Ernest Leon Yeakey, both of Austin, Tex., assignors to Jefferson Chemical Co., Inc., Houston, Tex.

Filed Apr. 16, 1975, Ser. No. 568,794
Int. Cl.² C07C *121/78*
U.S. Cl. 260—465 E 10 Claims

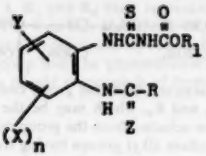
1. In a process for cyanoethylation of aromatic amines selected from the group of aromatic monoamines, aromatic diamines and polymethylene polyphenyl polyamines having an average functionality of from about 2.0 to about 3.0, with acrylonitrile, the improvement which consists essentially of contacting the reactants at a temperature of from about 80°C to about 300°C in the liquid phase in the presence of a silica-alumina catalyst having an alumina content of from about 5 to about 50 weight percent, the catalyst being present in an amount of from about 1 to about 20 percent by weight, based upon the aromatic amine, and recovering cyanoethylated aromatic amines from the reaction mixture.

3,943,163
ALKYL 4-[O-SUBSTITUTED AMINOPHENYL]-3-THIOALLOPHANATES

Charles De Witt Adams, Newark, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Division of Ser. No. 865,984, Oct. 13, 1969. This application Apr. 20, 1972, Ser. No. 245,900
Int. Cl.² C07C *157/12*
U.S. Cl. 260—470 6 Claims

1. A compound of the formula



wherein

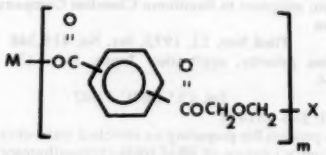
X is hydrogen, fluorine, chlorine, or bromine;
Y is hydrogen or alkyl of 1 to 4 carbon atoms;
R_1 is alkyl of 1 to 12 carbon atoms;
Z is oxygen or sulfur; and
R is hydrogen, alkyl of 1 to 12 carbon atoms, alkyl of 1 to 12 carbon atoms substituted with fluorine, chlorine, bromine, alkoxy of 1 to 3 carbon atoms or acetyl; or alkoxy of 1 to 4 carbon atoms; when Y is alkyl, *n* is 0; and when Y is hydrogen, *n* is 1, 2 or 3; and the sodium, potassium, lithium, calcium, barium, copper, zinc, and manganese salts of these compounds.

3,943,164
POLY(ETHER ESTERS) OF PHTHALIC ACID SALTS AND DI(HALOMETHYL) ETHER

Donnie G. Brady; Harold R. Deck; Faber B. Jones, all of Bartlesville, Okla., and John H. Underwood, Charlotte, N.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 153,866, June 16, 1971, Pat. No. 3,716,601. This application Dec. 5, 1972, Ser. No. 312,330
Int. Cl.² C07C *69/82*
U.S. Cl. 260—475 P 5 Claims

1. A poly(ether ester) consisting essentially of repeating units as represented by the formula



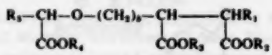
wherein m is an integer sufficient to give said poly(ether ester) a weight average molecular weight of at least 1000, M is selected from ammonium and Group I metals and X is selected from chlorine, bromine, and iodine.

3,943,165
ESTERS OF CARBOXYMETHYLOXYSUCCINIC ACID AND DERIVATIVES THEREOF

Vincent Lamberti, Upper Saddle River, N.J., assignor to Lever Brothers Company, New York, N.Y.

Filed July 14, 1972, Ser. No. 271,852
Int. Cl.² C07C *69/66*
U.S. Cl. 260—484 P 8 Claims

1. A compound having the formula



wherein R_1 is selected from the group consisting of —H and —CH_3; R_2, R_3 and R_4, which may be the same or different substituents, are selected from the group consisting of straight and branched chain alkyl groups having from 1 to 12 carbon atoms, benzyl and cyclohexyl; R_5 is selected from the group consisting of —H, —CH_3 and —C_2H_5; and, b=0,1.

3,943,166

SEPARATION OF AN ISOMERIC MIXTURE OF ACETOXY-ALDEHYDES BY CATALYTIC DECOMPOSITION OF AN ALDEHYDE TO ACETIC ACID AND METHACROLEIN

David F. Aycock, Lenox, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed June 21, 1973, Ser. No. 372,094

Int. Cl.² C07C *67/48*

U.S. Cl. 260—499 **3 Claims**

1. A process for separating 2-methyl-3-acetoxypropionaldehyde from an isomeric mixture of 4-acetoxybutyraldehyde, 2-methyl-3-acetoxypropionaldehyde and 2-acetoxybutyraldehyde which comprises heating at a temperature of from about 90° to about 180°C said mixture in the presence of an elimination catalyst which decomposes the 2-methyl-3-acetoxypropionaldehyde to acetic acid and methacrolein, and separating the acetic acid and methacrolein therefrom by distillation; said elimination catalyst being selected from the group consisting of a tertiary amine, silica-aluminas of from pure silica to pure alumina and zeolites; wherein the tertiary amine is selected from the group consisting of alkylamines, arylamines, cycloalkylamines, alkarylamines, aralkylamines of 1 to 25 carbon atoms and heterocyclic amines.

3,943,167

PROCESS FOR PREPARING TRANS-CHRYSANTHEMIC ACID

Gohu Suzukamo, Ibaraki; Masami Fukao; Tsuneyuki Nagase, both of Takatsuki, and Horosuke Toshioka, Ikeda, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Filed Nov. 13, 1973, Ser. No. 415,348

Claims priority, application Japan, Nov. 13, 1972, 47-113634

Int. Cl.² C07C *51/42*

U.S. Cl. 260—514 H **6 Claims**

1. A process for preparing an enriched trans-chrysanthemic acid from a mixture of alkyl trans-chrysanthemate and alkyl cis-chrysanthemate which comprises reacting said mixture with an alkali metal hydroxide or an alkali metal alcoholate in an amount of from 0.5 to 1 mole based on 1 mole of the trans-isomer in the presence of water or an alcohol at a temperature of from 10° to 150° C to hydrolyze the trans-isomer predominantly and separating the hydrolyzed product from the unreacted alkyl chrysanthemate to obtain an enriched trans-chrysanthemic acid.

3,943,168

CONDUCTOR COMPOSITIONS COMPRISING NICKEL BORIDES

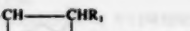
Frank Knowles Patterson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 13, 1974, Ser. No. 523,473

Int. Cl.² H01B *1/06*; H01C *1/06*

U.S. Cl. 252—519 **17 Claims**

1. Conductor compositions of finely divided inorganic powder dispersed in a liquid vehicle, wherein the inorganic powder comprises one or more nickel compounds having an overall approximate composition of



wherein the sum of a plus b is one,

a is in the range ⅓ to 1, and

b is in the range 0 to ⅔.

3,943,169

3-(TRISUBSTITUTED BENZOYL)-PROPIONIC ACID

Tadakazu Murata, Suita; Akira Nohara, Kyoto; Hirosada Sugihara, Suita, and Yasushi Sanno, Ikeda, all of Japan, assignors to Takeda Chemical Industries, Ltd, Osaka, Japan

Filed Sept. 12, 1972, Ser. No. 288,348

Claims priority, application Japan, Sept. 13, 1971, 46-71087; Sept. 13, 1971, 46-71088; Dec. 29, 1971, 47-3167; Jan. 11, 1972, 47-5401

Int. Cl.² C07C *65/00*, *65/22*

U.S. Cl. 260—521 R **6 Claims**

1. A compound which is 3-(2′,4′,5′-triethoxybenzoyl)-propionic acid.

6. A compound which is, 3-(2′-hydroxy-4′,5′-diethoxybenzoyl)-propionic acid.

3,943,170

PROCESS FOR THE PREPARATION OF HALO-METHYLPHOSPHINIC ACID HALIDES

Hans-Jerg Kleiner, Bad Soden, Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

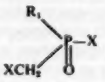
Filed Nov. 30, 1973, Ser. No. 420,696

Claims priority, application Germany, Dec. 4, 1972, 2259241

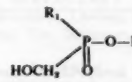
Int. Cl.² C07F *9/34*

U.S. Cl. 260—543 P **6 Claims**

1. A process for the preparation of a halomethylphosphinic acid halide of the formula



in which R_1 is alkyl of from 1 to 18 carbon atoms, cycloalkyl of from 5 to 8 carbon atoms phenyl or phenylalkyl of 7 to 10 carbon atoms and X is halogen, which comprises reacting a phosphinic acid derivative of the formula



in which R_1 is as defined above and R_2 is hydrogen, a monovalent cation, or alkyl of from 1 to 18 carbon atoms optionally substituted by halogen, with a reactive acid halide of the formula

in which n is 1 or 2 and X is halogen

3,943,171
METHOD OF PRODUCING ACRYLAMIDE WITH A RANEY COPPER CATALYST

Karl H. Hoffmann, Sauk Village, and Donald R. Anderson, Oswego, both of Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Continuation-in-part of Ser. No. 473,182, May 24, 1974, abandoned, which is a continuation-in-part of Ser. No. 405,874, Oct. 12, 1973, abandoned. This application June 28, 1974, Ser. No. 484,176
Int. Cl.² C07C *103/08*
U.S. Cl. 260—561 N 35 Claims

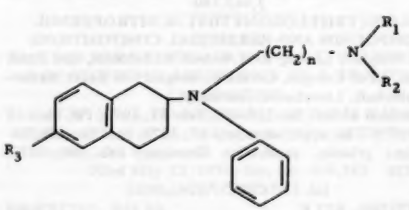
1. In an improved process of the type wherein acrylonitrile is hydrolyzed to acrylamide under aqueous liquid phase conditions in the presence of a Raney copper catalyst, the improvement which comprises using as said Raney copper catalyst one which has been prepared by contacting particles of a metal alloy comprised of copper and aluminum with an aqueous solution which has dissolved therein on a 100 weight percent total by-product free solution basis from greater than 0 to about 25 weight percent alkali metal hydroxide and from about greater than 0 to about 25 weight percent, or the solubility limit thereof in water, whichever is lower, of at least one aliphatic hydroxylated hydrocarbon compound, said aliphatic hydroxylated hydrocarbon compound having at least two carbon atoms per molecule, and at least two groups per molecule each of which is independently selected from the class consisting of hydroxyl, carboxyl, aldehyde, alkali metal carboxylate and esterified carboxylate, at least one of said groups being hydroxyl, said contacting being conducted at a temperature of below about 80°C.

3,943,172
DERIVATIVES OF 2-AMINO-(1,2,3,4-TETRAHYDRONAPHTHALENE), THE PREPARATION AND USE THEREOF

Pierre M. Vanhoof, and Pierre M. Clarebout, both of Brussels, Belgium, assignors to A. Christiaens, Societe Anonyme, Brussels, Belgium

Filed Oct. 5, 1973, Ser. No. 404,048
Claims priority, application Belgium, Oct. 6, 1972, 46268
Int. Cl.² C07C *87/64*
U.S. Cl. 260—570.5 P 2 Claims

1. Derivatives of 2-amino-(1,2,3,4-tetrahydronaphthalene) of the formula:



(1)

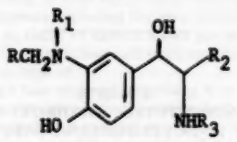
in which n=2 or 3, R_1 and R_2 each represent a lower alkyl group containing 1 to 4 carbon atoms with the proviso that R_1 may also represent hydrogen, and R_3 represents hydrogen or a lower alkoxy group and the pharmaceutically acceptable acid addition salts of said compounds of formula (1).

3,943,173
3-ALKYLAMINO-ALPHA-AMINOMETHYL-4-HYDROXYBENZYL ALCOHOLS

Donald F. Colella, Philadelphia, Pa., and Carl Kaiser, Haddon Heights, N.J., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Nov. 22, 1972, Ser. No. 308,867
Int. Cl.² C07C *91/22*
U.S. Cl. 260—570.6 6 Claims

1. A compound of the formula



wherein
R and R_1 are each hydrogen or C_1–C_4 alkyl;
R_2 is hydrogen, methyl, or ethyl; and
R_3 is isopropyl, t-butyl, cyclobutyl, 1-(p-hydroxybenzyl) ethyl, or 2-(p-hydroxybenzyl)-isopropyl
or a pharmaceutically acceptable nontoxic salt thereof.

3,943,174
BISULFITE REACTION WITH OLEFINS

Robert J. Ellis; Lawrence H. Shepherd, Jr., and Richmond M. Starrett, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Mar. 4, 1974, Ser. No. 448,039
Int. Cl.² C07C *139/12*
U.S. Cl. 260—513 B 22 Claims

1. A process for preparing alkyl sulfonate salts which comprises reacting from about 1.0 to about 1.7 mols of aqueous ammonium or alkali metal bisulfite with about 1.0 mols of straight chain terminal olefin having from about 8 to about 30 carbon atoms per molecule in the presence of lower alkanol having from 2 to about 4 carbon atoms per molecule and an effective amount of a reaction initiating agent, at a pH of from about 5 to about 8, at a temperature of from about 25° to about 200°C, the reaction system containing from about 70 to about 95 wt. percent of water and lower alkanol, the weight ratio of alkanol to water ranging from about 1:4 to about 3:1, the initial pH of the reaction mixture being from about 5 to about 8, SO_2 being fed to the system as the reaction progresses to maintain a selected pH of from about 5 to about 8, said process being conducted in the absence of free oxygen.

3,943,175

SYNTHESIS OF PURE 3,3'-DIAMINOBENZIDINE

Melvin L. Druin, West Orange, N.J., and Kenneth Oringer, Westport, Conn., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 868,198, Oct. 21, 1969, abandoned. This application Mar. 9, 1973, Ser. No. 339,910

Int. Cl.² C07C *85/26*, *85/04*

U.S. Cl. 260—581 10 Claims

1. A process for the synthesis of substantially pure 3,3'-diaminobenzidine from 3,3'-dichlorobenzidine consisting essentially of the sequential steps of:

I. reacting 3,3'-dichlorobenzidine with NH_3 in the presence of a catalyst consisting essentially of a copper chloride to form a crude reaction product;

II. mixing the crude reaction product with a stoichiometric excess of sulfuric acid to convert the 3,3'-diaminobenzidine to acid-insoluble 3,3'-diaminobenzidine hydrosulfate with the remainder of the reaction product being substantially dissolved;

III. filtering the reaction product and thereby recovering the 3,3'-diaminobenzidine hydrosulfate as filter cake; and

IV. contacting the filter cake with a base to reconvert the solid 3,3'-diaminobenzidine hydrosulfate to 3,3'-diaminobenzidine.

3,943,176

2-(SULFUR-SUBSTITUTED)-3-HYDROXY-5,5-DIMETHYL-2-CYCLOHEXEN-1-ONES

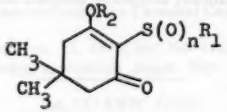
Joseph E. Dunbar, and Thomas J. Bohnert, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 319,361, Feb. 29, 1972, Pat. No. 3,852,359. This application May 3, 1974, Ser. No. 466,596

Int. Cl.² C07C *49/76*, *49/80*

U.S. Cl. 260—586 R 11 Claims

1. A 2-(sulfur-substituted)-3-hydroxy-5,5-dimethyl-2-cyclohexen-1-one corresponding to the formula



wherein R_1 is selected from the group consisting of alkyl of 1 to 6 carbon atoms, alkenyl and halo-alkenyl of 3-5 carbon atoms, 2-(lower alkylthio)lower alkyl and cyclohexylmethyl, R_2 represents hydrogen, ammonium or alkali metal and n represents an integer from 0 to 2.

3,943,177

COMPOUNDS OF THE SINENSAL TYPE, INTERMEDIATES AND PROCESS THEREFOR

Daniel Helmlinger, Dubendorf, and Peter Naegeli, Wettingen, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

Filed Mar. 2, 1973, Ser. No. 337,341

Claims priority, application Switzerland, Mar. 10, 1972, 3510/72

Int. Cl.² C07C *49/20*

U.S. Cl. 260—593 R 1 Claim

1. trans-2,6-Dimethyl-10-methylene-dodeca-1,6,11-triene-3-one.

3,943,178

SECONDARY ALCOHOL ETHER ETHOXYLATES

Werner Stein, Erkrath-Unterbach; Wolfgang Rupilius, Hilden Rhineland, and Peter Krings, Krefeld, all of Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

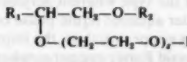
Filed June 11, 1974, Ser. No. 478,321

Claims priority, application Germany, June 18, 1973, 2331014

Int. Cl.² C07C *41/02*, *43/04*, *43/14*

U.S. Cl. 260—615 B 5 Claims

1. Secondary alcohol ether ethoxylates having the formula



wherein R_1 is a straight-chain aliphatic hydrocarbon radical having from 4 to 18 carbon atoms selected from the group consisting of alkyl and alkenyl, R_2 is an aliphatic hydrocarbon radical having from 1 to 10 carbon atoms selected from the group consisting of alkyl and alkenyl, and z is an average value between 3 and 18, with the proviso that the sum of the carbon atoms in R_1 and R_2 is from 6 to 22.

3,943,179

HYDROXYLATION OF AROMATIC COMPOUNDS

Pierre-Etienne Bost; Michel Costantini, both of Lyon; Michel Jouffret, Francheville le bas, and Guy Lartigau, Lyon, all of France, assignors to Rhone-Poulenc Textile, Paris, France

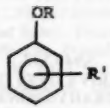
Filed Sept. 27, 1973, Ser. No. 401,172

Claims priority, application France, Sept. 28, 1972, 72.34358

Int. Cl.² C07C *41/00*, *37/00*

U.S. Cl. 260—621 G 7 Claims

1. A process for the hydroxylation of an aromatic compound of the general formula:



in which R and R', which may be identical or different, each represent a hydrogen atom or an alkyl radical containing 1 to 4 carbon atoms, wherein the aromatic compound is treated with hydrogen peroxide at a temperature from 20°to 150°C. in the presence of at least one element which is sulphur, selenium, tellurium, phosphorus, arsenic or antimony, in an amount from 0.001 to 1 gram atom of element per mol of hydrogen peroxide, the molar ratio of hydrogen peroxide to aromatic compound being not greater than 0.3:1.

3,943,180

2,4-BIS-(TRIFLUOROMETHYL)-6-NITROPHENOL COMPOUNDS AND HERBICIDAL COMPOSITIONS

Klaus Wagner; Ludwig Eue; Robert R. Schmidt, and Ernst Roos, all of Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

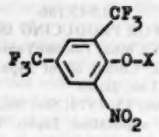
Division of Ser. No. 335,400, Feb. 23, 1973, Pat. No. 3,894,079. This application July 17, 1974, Ser. No. 489,206

Claims priority, application Germany, Feb. 29, 1972, 2209528

Int. Cl.² C07C *79/26*, *39/26*

U.S. Cl. 260—622 R 3 Claims

1. 2,4-bis-(trifluoromethyl)-6-nitrophenol compound of the formula



wherein

X is hydrogen or an equivalent of an alkali or alkaline earth metal.

3,943,181

SEPARATING OPTICALLY PURE *d*- AND *l*-ISOMERS OF MENTHOL, NEOMENTHOL AND ISOMENTHOL

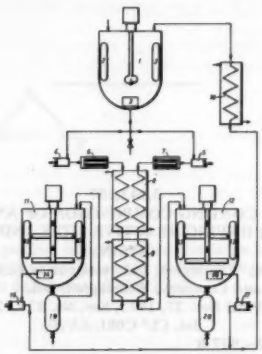
Jurgen Fleischer, Cologne; Kurt Bauer, and Ruldolf Hopp, both of Holzminden, all of Germany, assignors to Haarmann & Reimer Gesellschaft mit beschrankter Haftung

Continuation of Ser. No. 229,109, Feb. 24, 1972, abandoned. This application Sept. 3, 1974, Ser. No. 503,004

Claims priority, application Germany, Feb. 27, 1971, 2109456; Feb. 2, 1972, 2204771

Int. Cl.² C07C *35/12*

U.S. Cl. 260—631 R **5 Claims**



1. A process for the separation of optically active *d*- and *l*-isomers of a compound selected from the group consisting of menthol, neomenthol and isomenthol, which comprises forming a super-saturated solution or a supercooled melt consisting essentially of a *d,l*-isomeric mixture of an ester of the compound with an acid selected from the group consisting of benzoic acid, hexahydrobenzoic acid and benzoic acid substituted by up to 2 lower alkyl or alkoxy, fluorine, chlorine, bromine or nitro groups inoculating the solution or melt with crystals of the *d*- or *l*-form of the ester to effect selective crystallization of one of the two optical isomers; separating the crystals and subjecting them to hydrolysis to yield the corresponding enantiomorph of the starting compound.

3,943,182

PROCESS FOR THE SEPARATION OF ETHYLBENZENE BY SELECTIVE ADSORPTION ON A ZEOLITIC ADSORBENT

Richard W. Neuzil, Downers Grove, and Donald H. Rosback, Elmhurst, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed May 13, 1974, Ser. No. 469,163

Int. Cl.² C07C *7/13*

U.S. Cl. 260—674 SA **24 Claims**

1. A process for separating ethylbenzene from a feed mixture containing ethylbenzene and at least one xylene isomer which comprises contacting said mixture with an adsorbent comprising X structured zeolite containing at exchangeable cationic sites cations consisting of at least one element of Group I-A of the Periodic Table of Elements and which contains from about 0.02 to 2.5 wt. % H_2O measured by loss on ignition at 500° C., said contacting being at ethylbenzene adsorption conditions including a temperature from about 70° to about 450° F. and at a pressure of from about atmospheric to about 500 psig., and removing adsorbed ethylbenzene from the adsorbent.

3,943,183

AROMATIC HYDROCARBON ISOMER SEPARATION PROCESS BY ADSORPTION

Donald H. Rosback, Elmhurst, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 401,783, Sept. 28, 1973, Pat. No. 3,878,129, which is a continuation-in-part of Ser. No. 356,666, May 2, 1973, Pat. No. 3,878,127. This application July 31, 1974, Ser. No. 493,376

Int. Cl.² C07C *7/13*

U.S. Cl. 260—674 SA **9 Claims**

1. A process for separating the para-isomer from a feed mixture comprising at least two bi-alkyl substituted monocyclic aromatic isomers, including the para-isomer, said isomers having from 8 to about 18 carbon atoms per molecule which process comprises contacting said mixture with an adsorbent prepared by the steps of:

a. contacting a base material comprising X or Y zeolite with a fluoride-containing aqueous sodium hydroxide solution at first ion exchange conditions to effect the addition of sodium cations to and the extraction of alumina from said base material;

b. treating the sodium-exchanged base material at second ion exchange conditions to effect the essentially complete exchange of sodium cations with barium or barium and potassium cations; and,

c. drying the material at conditions to reduce the LOI at 900° C. to less than about 10 wt. %.

3,943,184

AROMATIC HYDROCARBON ISOMER SEPARATION PROCESS

Donald H. Rosback, Elmhurst, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 443,043, Feb. 15, 1974, Pat. No. 3,894,109. This application Mar. 27, 1975, Ser. No. 562,604

Int. Cl.² C07C *7/13*

U.S. Cl. 260—674 SA **19 Claims**

1. A process for separating the para-isomer from a feed mixture comprising at least two bi-alkyl substituted monocyclic aromatic isomers, including the para-isomer, said isomers having from 8 to about 18 carbon atoms per molecule, which process comprises contacting said mixture with an adsorbent prepared by the steps of:

a. contacting a base material comprising Y zeolite with an aqueous sodium hydroxide solution at first ion exchange conditions to effect the addition of sodium cations to said base material;

b. treating the sodium-exchanged base material at second ion exchange conditions to effect the essentially complete exchange of sodium cations with one or more cations selected from the group consisting of potassium, cesium, and rubidium; and,

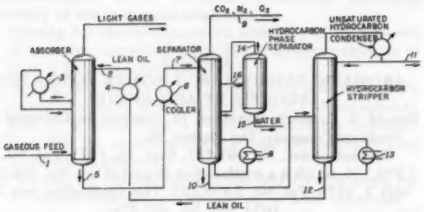
c. drying the material at conditions to reduce the LOI at 900° C. to less than about 10 weight percent thereby selectively adsorbing at adsorption conditions said para-isomer and thereafter recovering said para-isomer.

3,943,185

DIOLEFIN PRODUCTION AND PURIFICATION

Lloyd D. Tschopp, Humble, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

Filed May 28, 1974, Ser. No. 473,341
Int. Cl.² C07C 5/48, 7/02
U.S. Cl. 260—680 E 9 Claims



1. In a process for the preparation of unsaturated hydrocarbons without the formation of excessive polymer which comprises:

oxidatively dehydrogenating C_3 to C_9 hydrocarbons having at least one

grouping, to obtain a gaseous mixture comprising 0.003 to 15 mol percent water per mol of total hydrocarbon, an organic phase comprising 3.5 to 8.0 mol percent, exclusive of water, of an unsaturated hydrocarbon corresponding to said C_3 to C_9 hydrocarbon and having a higher degree of unsaturation thereover, 20 to 93 mol percent inert noncondensable gases and 0.001 to 3 mol percent oxygen, said total hydrocarbons constituting at least 85 mol percent of the organic phase of said gaseous mixture;

intimately contacting said gaseous mixture in a first zone with a hydrocarbon oil having a boiling point within the range of about 170° to 320° F., said first zone being maintained at a temperature of between about 60° and 150° F. and a pressure of between 100 p.s.i.g. and 200 p.s.i.g.;

removing from said first zone a liquid composition containing said oil and absorbed gases including unsaturated hydrocarbons;

feeding said oil and absorbed gases to a second zone;

removing from said second zone a gaseous mixture of oxygen and inert noncondensable gases;

removing from said second zone an organic liquid composition comprising said oil and absorbed unsaturated hydrocarbons;

separating said organic liquid composition from said second zone to recover said hydrocarbons;

wherein the improvement comprises:

maintaining said second zone at a temperature of between 55° and 190° F. and a pressure of between −5 and 70 p.s.i.g., and removing a mixed hydrocarbon-aqueous liquid phase composition which is predominately water on a molar basis, from said second zone at a point intermediate said removal of the gaseous mixture of oxygen and inert noncondensable gases and the oil and absorbed unsaturated hydrocarbons in said second zone, said water not being returned to said second zone.

3,943,186

METHOD FOR PRODUCING ISOPENTENE

Shunsuke Nakatomi, Chiba; Takemi Yamamura, Ichihara, and Yoshikazu Akiba, Chiba, all of Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Dec. 13, 1974, Ser. No. 532,451
Claims priority, application Japan, Dec. 28, 1973, 48-144682
Int. Cl.² C07C 3/62
U.S. Cl. 260—683 D 21 Claims

1. A method for producing isopentene comprising the steps of:

providing a composite catalyst which has been prepared from 100 parts by weight of a carrier material consisting of an activated high purity alumina, 0.5 to 5 parts by weight of a barium or strontium compound calculated in terms of an oxide thereof and 1 to 20 parts by weight of a silver compound calculated in terms of silver metal by depositing said barium or strontium compound and said silver compound onto said alumina carrier to produce a precursory composite catalyst and calcining the precursory composite catalyst at a temperature of 300° to 900°C,

bringing a hydrocarbon mixture containing isobutene and n-butene into contact with said composite catalyst at a temperature of 200° to 350°C, and;

isolating the resultant isopentene from the reaction mixture.

3,943,187

DUCTILE COATING COMPOSITION OF AN ACRYLIC POLYMER HAVING REACTIVE SITES AND AN EPOXY RESIN

Souheng Wu, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 27, 1973, Ser. No. 428,723
Int. Cl.² C08L 63/10
U.S. Cl. 260—837 R 10 Claims

1. A coating composition consisting essentially of a compatible mixture of film-forming constituents in a liquid carrier; wherein the film-forming constituents consist essentially of

a. 60–95% by weight of an acrylic polymer of hard and soft segments and having a number average molecular weight of about 25,000–70,000 determined according to gel permeation chromatography and a glass transition temperature of about −20° C. to +60° C. and wherein the acrylic polymer consists essentially of polymerized units of about

10–50% by weight of styrene, methyl styrene, methyl methacrylate or acrylonitrile,

40–89.5% by weight of an alkyl acrylate having 1–18 carbon atoms in the alkyl group or an alkyl methacrylate having 2–18 carbon atoms in the alkyl group,

0.5–10% by weight of an unsaturated carboxylic acid; and

b. 5–40% by weight of an epoxy resin having at least one vic epoxy group in combination with at least one hydroxyl group or epoxide group or mixture thereof per polymer chain and having a number average molecular weight of 300 to 20,000 determined as above;

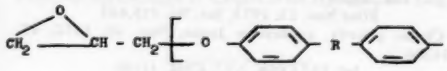
wherein the film-forming constituents in the fully cured state have a brittle ductile transition temperature of about −40° C. to +20° C. measured at an elongation rate of 10% per minute on an Instron testing machine using a free film about 2.0–4.0 mils thick of the fully cured composition.

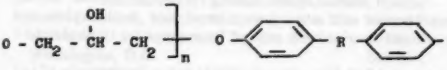
5. The coating composition of claim 1 containing 25–50% by weight of film-forming constituents in a solvent for the

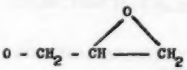
film-forming constituents; wherein the film-forming constituents consist essentially of

a. 70–80% by weight, based on the weight of the film-forming constituents of an acrylic polymer consisting essentially of polymerized units of about
30–40% by weight of methyl methacrylate,
50–65% by weight of ethyl acrylate, and
5–10% by weight of acrylic acid; and

b. 20–30% by weight, based on the weight of the film-forming constituents, of an epoxy resin of the formula







where *n* is a positive integer sufficiently large to provide a number average molecular weight of 300 to 20,000 and having an epoxide equivalent of 875–2500.

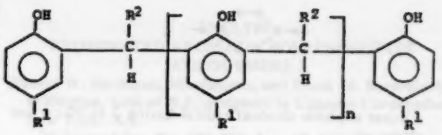
3,943,188

FIRE RESISTANT VINYL RESIN WITH METAL SALT OF PHENOLIC RESIN

Norman Fishman, Menlo Park, and Dean B. Parkinson, Redwood City, both of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed Oct. 15, 1973, Ser. No. 406,476
Int. Cl.² C08L *27/00*
U.S. Cl. 260—847 **10 Claims**

1. A thermoplastic vinyl halide resin composition having good fire resistance, said composition comprising a vinyl halide resin admixed with from about 1 to 10 weight percent, based on the weight of the vinyl halide resin, of the reaction product of a polyvalent metal selected from the group consisting of cupric copper and metals of groups II, IV and VIII of the Periodic Table with an excess of a thermoplastic phenolaldehyde resin of the novolac type, the ratio of phenolic hydroxyl groups of the said phenol-aldehyde resin to the valencies of the polyvalent metal being from about 1.5 to about 4.5, whereby the said salt contains reactive phenolic hydroxy groups as well as salt linkages wherein the hydrogen of a phenolic hydroxy group is replaced by a valency of the said metal; said phenol-aldehyde resin having the structure



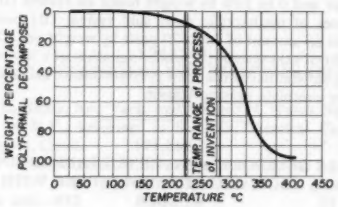
where *n* is a small number having an average value of from about 1 to 4, R^1 represents hydrogen, halogen or an alkyl group, and R^2 represents hydrogen or a $C_1 - C_3$ alkyl group.

3,943,189

PROCESS FOR PREPARATION OF COPOLYMERS FROM POLYESTERS AND ALIPHATIC POLYFORMALS

Harry Robert Musser, and Winston Jerome Jackson, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 29, 1974, Ser. No. 528,188
Int. Cl.² C08G *63/60;* **C08L** *67/00*
U.S. Cl. 260—860 **5 Claims**



1. A process for preparing a copolymer having an inherent viscosity of at least 0.4 measured at 25°C. using 0.50 gram of polymer per 100 ml. of a solvent composed of 60 volumes of phenol and 40 volumes of tetrachloroethane comprising contacting within a temperature range of about 220 to about 280°C.

A. a polyester comprised of
1. a dicarboxylic acid which is at least 80 mole percent terephthalic acid, and
2. a diol which is at least 80 mole percent 1,4-butanediol, and

B. based on the weight of the copolymer, from 10 to 60 weight percent of a polyformal having an inherent viscosity of at least 0.05 measured at 25°C. using 0.50 gram of polymer per 100 ml. of a solvent composed of 60 volumes of phenol and 40 volumes of tetrachloroethane corresponding to the structure

$$H\text{-}[O\text{—}R\text{—}O\text{—}CH_2]\text{-}O\text{—}R\text{—}OH$$

wherein R is

a linear aliphatic divalent radical having 2 to 10 carbon atoms, or

$$-[R'-O]_n-R'-$$

where R' is a linear aliphatic divalent radical having 2 to 4 carbon atoms and *n* is an integer from 1 to 10.

3,943,190

PROCESS FOR PREPARING ACRYLATE POLYMERS

Takeaki Abe, Yokohama; Masaharu Horikawa, Ayase, and Jiro Kurita, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed July 30, 1974, Ser. No. 493,646

Claims priority, application Japan, Aug. 15, 1973, 48-90858

Int. Cl.² C08F *6/24, 265/06*

U.S. Cl. 260—876 R **10 Claims**

1. A process for preparing acrylate polymers which comprises suspension-polymerizing a system (I) comprising 60 to 100% by weight based on the system (I) of an alkyl ester of methacrylic acid, 0 to 40% by weight based on the system (I) of an alkyl ester of acrylic acid and 0 to 10% by weight based on the system (I) of other vinyl monomers copolymerizable with said esters to obtain a suspension containing polymer beads; and adding to the resulting suspension an aqueous suspension of a system (II) comprising 89 to 99.9% by weight based on the system (II) of an alkyl ester of acrylic acid, 0.1 to 3% by weight based on the system (II) of a cross-linking monomer and 0 to 10% by weight based on system (II) of an alkyl ester of methacrylic acid, said system (II) being employed in an amount of 20 to 70 parts by weight per 100 parts by weight of said system (I), under agitation at a temperature allowing substantial advance of polymerization and thereafter effecting complete polymerization.

3,943,191

BLENDS OF A POLYPHENYLENE ETHER RESIN AND ALKENYL AROMATIC RESINS MODIFIED WITH EPDM RUBBER

Glenn D. Cooper, and Visvaldis Abolins, both of Delmar, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Oct. 1, 1973, Ser. No. 401,986

Int. Cl.² C08L *23/16*

U.S. Cl. 260—876 R **9 Claims**

1. A thermoplastic molding composition which comprises:
   a. from 20–65% by weight of a polyphenylene ether resin and
   b. from 35–80% by weight of an alkenyl aromatic resin that is modified with a rubbery interpolymer of a mixture of monoolefins and a polyene by polymerizing an alkenyl aromatic monomer in the presence of said rubbery interpolymer.

3,943,192

ELASTOMERIC BLENDS

Douglas Coulthard, Sarnia, Canada, assignor to Polysar Limited, Sarnia, Canada

Continuation of Ser. No. 212,701, Dec. 27, 1971, abandoned, which is a continuation-in-part of Ser. No. 799,934, Nov. 17, 1969, abandoned. This application Aug. 20, 1973, Ser. No. 389,520

Claims priority, application Canada, Mar. 5, 1968, 013997

Int. Cl.² C08L *9/02*

U.S. Cl. 260—890 **4 Claims**

1. A chloroprene polymer composition of improved processabiity comprising a blend of (A) about 90–65 parts by weight of a rubbery chloroprene polymer and (B) about 10–35 parts by weight of rubbery copolymer of 55–80 parts by weight of a 2-alkyl butadiene-1,3 where the alkyl group contains 1–5 carbon atoms with 45–20 parts by weight of an acrylic nitrile of the general formula $CH_2 = C(R) - CN$ where R is selected from hydrogen, C_1–C_3 alkyl, halogen and cyano radicals.

3,943,193

CHLOROPRENE RUBBER COMPOSITION HAVING HIGH THERMAL AGING RESISTANCE AND OIL RESISTANCE

Toshio Miyagawa; Norio Inoue, and Tadayuki Suenaga, all of Shin-nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Japan

Filed Nov. 13, 1973, Ser. No. 415,442

Claims priority, application Japan, Nov. 16, 1972, 47-114286

Int. Cl.² C08K *3/22*; C08L *11/00*

U.S. Cl. 260—890 **4 Claims**

1. A thermal aging and oil resistant chloroprene rubber composition which comprises:
   a. a linear copolymer of chloroprene and a methacrylate selected from the group consisting of alkyl, allyl and aralkyl methacrylate having 1 to 20 carbon atoms, wherein said chloroprene annd said methacrylate are copolymerized in a ratio of from about 1 : 10 to about 10 : 1; and
   b. polychloroprene homopolymer, wherein the ratio of (a) to (b) is from about 5 : 95 to 85 : 15, which are vulcanized in the presence of
   c. a metal oxide; and
   d. quinone dioxime dibenzoate.

3,943,194

FLAMEPROOF MOULDING COMPOSITIONS BASED ON POLYOLEFINS

Franz-Josef Dany, Erftstadt Lechenich; Joachim Wortmann, Hurth; Peter Münch, Hurth-Burbach, and Günther Braun, Oberhausen, all of Germany, assignors to Hoechst Aktiengesellschaft and Ruhrchemie Aktiengesellschaft, both of, Germany

Division of Ser. No. 362,517, May 21, 1973. This application Oct. 1, 1974, Ser. No. 511,015

Claims priority, application Germany, May 25, 1972, 2225323

Int. Cl.² C08L *23/06, 23/12*

U.S. Cl. 260—897 B **4 Claims**

1. A flameproof moulding composition comprising a pulverulent blend of a polyolefin and a plurality of flame retardants consisting of, in addition to red phosphorus, polyacrylonitrile having a molecular weight of 15,000 – 250,000 and a particle size of 75–200 microns, the amount of flame retardants being about 10–30 weight % of said composition and the quantitative ratio of red phosphorus and polyacrylonitrile being 70:30 – 30:70.

3,943,195

SELF-EXTINGUISHING THERMOPLASTIC MOLDING MATERIAL

Herbert Naarmann, Wattenheim, and Klaus Penzien, Ludwigshafen, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Nov. 21, 1974, Ser. No. 525,822

Claims priority, application Germany, Nov. 26, 1973, 2358855

Int. Cl.² C08L *25/06*

U.S. Cl. 260—874 **5 Claims**

1. A thermoplastic molding material based on a styrene polymer or olefin polymer which has a content of from 0.5 to 10% by weight of a flameproofing agent consisting of a brominated oligomer or polymer of a dialkylbenzene, a trialkylbenzene or a tetraalkylbenzene of a degree of polymerization of from 2 to 200.

3,943,196

ALKOXY DERIVATIVES OF THE ADDUCT FROM PHOSPHORUS OXYCHLORIDE AND HEXAMETHYLPHOSPHORAMIDE

Robert M. Murch, Ashton, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 19, 1974, Ser. No. 480,919
Int. Cl.² C07F 9/02
U.S. Cl. 260—926 3 Claims

1. A compound having the formula: $(RO)_3P(O).(Me_2N)_3PO$, wherein R = $ClCH_2CH_2$, Cl_3CCH_2, $Cl_3CCH_2CH_2(ClCH_2)_2CH$, $CH_2BrCHBrCH_2$, C_2H_5 and CH_3.

3,943,197

ALKOXY DERIVATIVES OF THE ADDUCT FROM PHOSPHOROUS PENTACHLORIDE AND HEXAMETHYLPHOSPHORAMIDE

Robert M. Murch, Ashton, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 19, 1974, Ser. No. 480,912
Int. Cl.² C07F 9/02
U.S. Cl. 260—926 4 Claims

1. A compound having the formula: $(RO)_3PCl_2{\cdot}(Me_2N)_3PO$, wherein R = $ClCH_2CH_2$, Cl_3CCH_2, $Cl_3CCH_2CH_2(ClCH_2)_2CH$, $CH_2BrCHBrCH_2$, CH_3 and C_2H_5.

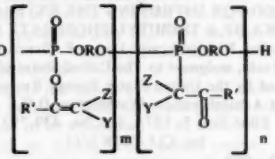
3,943,198

POLYALKYLENE GYLCOL VINYL PHOSPHATES

Kyung S. Shim, Irvington, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 410,674, Nov. 12, 1973, which is a continuation-in-part of Ser. No. 86,313, Nov. 2, 1970, Pat. No. 3,819,756, which is a continuation-in-part of Ser. No. 63,262, Aug. 6, 1970, abandoned. This application July 22, 1974, Ser. No. 490,595
The portion of the term of this patent subsequent to June 25, 1991, has been disclaimed.
Int. Cl.² C07F 9/11
U.S. Cl. 260—929 4 Claims

1. Polyalkylene glycol vinyl phosphates having the formula:



where R is a polyalkylene glycol residue formed by removing two hydroxyl groups from a polyalkylene glycol having the formula:

$$HO-[R''-O]_m-H$$

where R'' is an alkylene group of from 2 to 20 carbon atoms and *m'* is an integer from 2 to 20, *m* and *n* are each integers of from about 1 to 100, R' is selected from the group consisting of hydrogen, lower alkyl and lower haloalkyl, provided that when R' is lower haloalkyl, monohalo substitution is absent on its alpha carbon atom, and Z and Y are each selected from the group consisting of hydrogen, lower alkyl and lower haloalkyl.

3,943,199

BROMINATED AROMATIC POLYPHOSPHATE COPOLYMERS

Robert W. Stackman, Morristown, and Frank M. Berardinelli, Millington, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 432,372, Jan. 10, 1974, Pat. No. 3,883,471. This application July 23, 1974, Ser. No. 490,996
Int. Cl.² C07F 9/12
U.S. Cl. 260—930 2 Claims

1. A brominated aromatic polyphosphate copolymer of the formula

where *x* = about 1 to 3, *y* = about 1 to 3, and *n* = about 2 to 30.

3,943,200

BIS ALKYL PHOSPHORUS ESTERS OF DICARBOXYLIC ACIDS

Milton L. Honig, New York, and Edward N. Walsh, New City, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed July 15, 1974, Ser. No. 488,632
Int. Cl.² C07F 9/40
U.S. Cl. 260—932 11 Claims

1. Compounds having the formula

wherein R' is a C_1–C_8 alkyl or haloalkyl group and R is selected from the group consisting of an unsubstituted or bromo-substituted C_1–C_8 alkylene group and an unsubstituted or bromo-substituted C_1–C_8 hydrocarbon chain group having arylene or ethylenic unsaturation interruption in its chain.

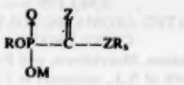
3,943,201

ALKOXY CARBOXYCARBONYLPHOSPHONIC ACID ESTERS

Colin Leslie McIntosh, Newark, Del., assignor to E. I. Du Pont de Nemours and Comapny, Wilmington, Del.

Continuation-in-part of Ser. Nos. 381,620, July 23, 1973, abandoned, and Ser. No. 397,723, Sept. 17, 1973, abandoned. This application May 30, 1974, Ser. No. 474,536
Int. Cl.² C07F 9/32; A01N 9/36
U.S. Cl. 260—941 4 Claims

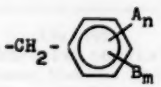
1. A compound of the formula;



wherein

Z is oxygen;

R is alkyl of 1 to 8 carbon atoms, optionally substituted with a chlorine, bromine, fluorine, or iodine; alkenyl of 3 to 8 carbon atoms; or



wherein

A is chlorine or methyl,

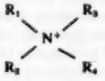
B is chlorine or methyl,

n is 0 or 1, and

m is 0 or 1;

R_5 is alkyl of 1 to 6 carbon atoms, alkenyl of 3 to 4 carbon atoms, or benzyl; and

M is hydrogen, sodium, lithium, potassium, calcium, magnesium, manganese, barium, or



wherein

R_1 is hydrogen, alkyl of 1 to 4 carbon atoms, or hydroxyalkyl of 2 to 4 carbon atoms;

R_2 is hydrogen, alkyl of 1 to 4 carbon atoms, or hydroxyalkyl of 2 to 4 carbon atoms;

R_3 is hydrogen, alkyl of 1 to 4 carbon atoms, or hydroxyalkyl of 2 to 4 carbon atoms; and

R_4 is hydrogen or alkyl of 1 to 12 carbon atoms,

provided that the total number of carbon atoms in R_1, R_2, R_3, and R_4 is less than 16.

3,943,202

O-METHYL/ETHYL-S-PROPYL/BUTYL-O-PHENYL THIOPHOSPHATES AND DITHIOPHOSPHATES HAVING AN ETHER GROUP OR THE PHENYL RING

Ernst Beriger, Allschwil, Switzerland; Manfred Böger, Haltingen, Germany; Jozef Drabek, Allschwil, and Odd Kristiansen, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

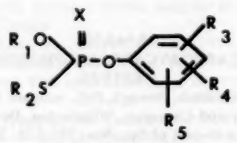
Division of Ser. No. 408,874, Oct. 23, 1973, Pat. No. 3,898,305. This application Dec. 20, 1974, Ser. No. 534,594

Claims priority, application Switzerland, Nov. 3, 1972, 16043/72; Sept. 21, 1973, 13638/73

Int. Cl.² C07F 9/12

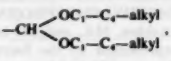
U.S. Cl. 260—950 **6 Claims**

1. A compound of the formula



(I)

wherein R_1 represents methyl or ethyl, R_2 represents n-propyl, isobutyl or sec. butyl, R_3 and R_4 each represents hydrogen, chlorine,bromine, methyl or ethyl, R_5 represents —O-C_3-C_5—alkenyl, —O-C_3-C_5—alkinyl, —O-C_1-C_4—alkylene—O-C_1-C_4—alkyl, —O-CH_2—CCl=CH_2, —O-CH_2-CH=CHCl,



and X represents oxygen or sulphur.

3,943,203

PHOSPHOROTHIONOAMIDATES

Takeo Satomi, Takarazuka; Kunio Mukai, Nishinomiya; Akihiko Mine; Naganori Hino, both of Toyonaka, and Kohshi Tateishi, Minoo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

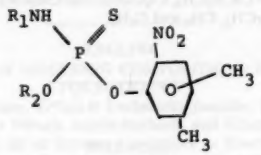
Filed Oct. 5, 1971, Ser. No. 186,760

Claims priority, application Japan, Dec. 25, 1970, 45-129021

Int. Cl.² C07F 9/24

U.S. Cl. 260—954 **7 Claims**

1. A compound of the formula



wherein R_1 is sec-butyl and R_2 is methyl or ethyl.

3,943,204

METHOD FOR IMPROVING THE EXTRACTION PROPERTIES OF A TRIBUTYL PHOSPHATE SOLUTION

Earl C. Martin, Richland, and Lester E. Bruns, Kennewick, both of Wash., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Feb. 5, 1974, Ser. No. 439,792

Int. Cl.² C07F 9/11

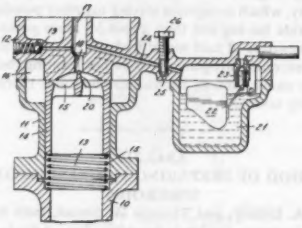
U.S. Cl. 260—990 **2 Claims**

1. A process for improving the extraction properties of tributyl phosphate in an organic diluent selected from the group consisting of kerosene, carbon tetrachloride and normal paraffin hydrocarbon containing dibutyl phosphate, monobutyl phosphate and phosphoric acid as degradation products of tributyl phosphate comprising: contacting the tributyl phosphate solution containing the degradation products with an amount of diazomethane effective to esterify the degradation products, the diazomethane being present up to 0.1 M in a solvent selected from the group consisting of ether, halogenated hydrocarbons, and normal paraffin hydrocarbons, whereby the degradation products are esterified to the triesters which have improved extraction properties.

3,943,205
INTERNAL COMBUSTION ENGINE

Wilfred T. Oliver, Rugby, England, assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 16, 1974, Ser. No. 533,366
Claims priority, application United Kingdom, May 3, 1974, 19945/74
Int. Cl.² F02M 7/22
U.S. Cl. 261—30 12 Claims



1. A carburetor having an air/fuel induction passage open to air at one end and connected at its opposite end to the intake manifold of an internal combustion engine to be subject to the manifold vacuum therein for the flow of an air/fuel mixture thereinto, a throttle valve in the passage movable between positions opening and closing the passage, an additional air passage having a discharge portion open to the induction passage on the manifold side of the throttle valve and connected at its inlet end to a compressed air source of a capacity providing a pressure in the air passage higher than the maximum manifold pressure by a critical value sufficient to maintain air flow through the air passage at sonic velocity at all times during engine operation, and a fuel supply line connected to the air passage for the induction of a continuous supply of fuel therefrom into the air passage irrespective of the position of the throttle valve, the air passage comprising a flow restricting orifice, the throttle valve having additional means thereon movable into and out of the discharge end of the air passage upon predetermined movement of the throttle valve to vary the orifice size and flow volume as a function of throttle valve movement.

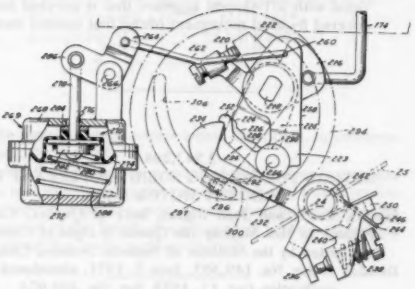
3,943,206
CARBURETOR TEMPERATURE RESPONSIVE THROTTLE PLATE POSITIONER

Phillip A. Schubeck, Woodhaven, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 424,134, Dec. 12, 1973, abandoned. This application July 14, 1975, Ser. No. 595,660
Int. Cl.² F02M 1/10
U.S. Cl. 261—39 B 1 Claim

1. An engine idle speed control for the throttle plate of a carburetor having an induction passage open at one end to air and adapted to be connected at its other end to the intake manifold of an internal combustion engine, and a spring closed throttle plate mounted for rotation across the passage to control flow of air and fuel therethrough,

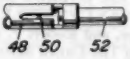
the control including a lever operatively connected to the throttle plate for rotation therewith, a fast idle cam rotatably mounted for cooperation with the lever, the cam having a stepped contoured peripheral surface engaged by the lever during the closing movement of the throttle plate, the surface consisting of a series of circumferentially contiguous stepped faces of progressively changing radial extension with respect to the axis of the cam, the faces being separately engagable with the lever so as to progressively change the closed position of the throttle lever as a function of the rotative position of the cam to thereby control the idle speed positions of the throttle plate as a function of the movement of the cam, a temperature responsive element connected to the fast idle cam and movable in response to the attainment of predetermined temperature levels to rotate the cam, a shaft rotatably mounting a bellcrank-like lever, the latter lever having a finger-like portion pivotably mounted at one end, the portion being swingable to a position between the lever and cam surface during engine off conditions to cam the lever away from the cam surface incrementally to increase the degree of opening of the throttle plate for starting purposes in direct proportion to the increase in throttle opening afforded by the particular cam face that would be engaged by the lever for the prevailing temperature level, spring means acting on said finger-like portion biasing the portion to a position between the lever and cam face, and engine vacuum responsive servo means operable in response to a predetermined engine manifold vacuum level acting thereon to withdraw the movable means against the spring means bias to permit return of the lever against the cam face and return of the throttle plate to a less open position and one that is dictated by the radial extent of the particular face of the cam surface presented for engagement by the lever in accordance with the prevailing temperature level.



3,943,207
INJECTION CARBURETOR

Simon G. Harootian, 10 Rollingwood Drive, Worcester, Mass. 01609

Continuation-in-part of Ser. No. 415,630, Nov. 14, 1973, abandoned, which is a continuation of Ser. No. 198,632, Nov. 15, 1971, abandoned. This application Aug. 19, 1974, Ser. No. 498,709
Int. Cl.² F02M 9/08
U.S. Cl. 261—44 A 6 Claims



1. An injection carburetor, comprising

a. a housing having a main passage extending therethrough and a transverse bore extending across the main passage,

b. a cylindrical control body rotatably mounted in the transverse bore and having a flow passage in the form of a cylindrical bore extending through its central portion transversely of its axis,

c. conjugate means extending between the control body and the housing to cause the control body to move axially when it is rotated, the conjugate means consisting of a helical groove formed on the outer surface of the body and a peg fixedly mounted in the housing and having an end lying in the groove,

d. a fuel tube mounted in the housing and extending through a suitable axial bore extending into one end of the control body, the inner end of the tube lying in the flow passage centrally thereof,

e. a first control member extending axially through the other end of the control body into the flow passage in alignment with the end of the fuel tube, and

f. a second control member threadedly mounted in the housing coaxially of the tube and having an end lying in the outer end of the fuel tube to permit high speed adjustment, wherein the first control member is a smaller tube than the fuel tube, so that it telescopes smoothly within it, and wherein the fuel tube has a sidewall which is provided with a T-shaped aperture that is covered and uncovered by axial movement of the first control member.

3,943,208

METHOD FOR BINDING SOLID PROPELLANT TO ROCKET MOTOR CASE

Jacques Ratte, and Jean Bigras, both of Quebec, Canada, assignors to Her Majesty the Queen in right of Canada as represented by the Minister of National Defense, Canada

Division of Ser. No. 149,303, June 2, 1971, abandoned. This application Oct. 12, 1973, Ser. No. 405,974

Int. Cl.[2] C06B 21/00

U.S. Cl. 264—3 R 2 Claims

1. A method comprising preparing a partially cured composition in the form of a sheet for use as a flexible insulant in a rocket motor containing a case-bonded solid rocket propellant which comprises admixing a curable elastomeric polymer binder, a curing agent and a curing catalyst with from 50–80% by weight of the total composition of a siliceous heat-resistant reinforcing filler, at least 50% of said filler being in the form of fibers and the remainder in the form of floats, partially curing the dough obtained to allow curing thereof to the consistency required for subsequent rolling, rolling said partially cured dough into said sheet, pressing said sheet around the inside walls of a rocket motor casing to effect bonding between said sheet and the inside of said wall, introducing a castable rocket propellant that has the same binder as said partially cured composition into the casing and fully curing the propellant and insulant to bond the insulant and propellant together.

3,943,209

HIGH VOLUMETRIC ENERGY SMOKELESS SOLID ROCKET PROPELLANT

Arthur LoPresti, Hope, and Robert P. Baumann, Dover, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 398,484, Sept. 21, 1964, abandoned, which is a division of Ser. No. 50,045, Aug. 16, 1960. This application Jan. 11, 1968, Ser. No. 740,399

Int. Cl.[2] C06B 21/00

U.S. Cl. 264—3 B 2 Claims

1. A method of forming high density and high energy propellants consisting of a solid inorganic oxidizing salt, a binder and a granular organic explosive comprising; mixing the propellant ingredients together and suspending said ingredients in an organic solvent selected from the group consisting of acetone, benzene, and ethyl ether with agitation at ambient temperature to form a colloid, extruding the colloid, and raising the temperature to approximately 140°F to cure said composition.

3,943,210

PREPARATION OF METAL HYDRIDE BODIES BY IMPROVED POWDER METALLURGY PROCESS

James B. Vetrano, Woodland Hills, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 9, 1964, Ser. No. 360,166

Int. Cl. G21c 21/00

U.S. Cl. 264—.5 8 Claims

1. A method of fabricating a group IVB metal hydride body having a hydrogen content of at least 55 atom percent and a high density, which comprises mixing together powders of said metal hydride having less than about 55 atom percent hydrogen with powders of said metal hydride having at least about 60 atom percent hydrogen, and then hot forming the resulting mixture to cause flow of ductile powders and thereby give a high density compact.

3,943,211

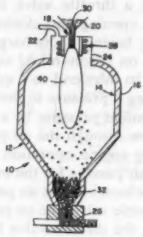
METHOD OF PREPARING MAGNESIUM OXIDE SPHEROIDS

Clarence A. Dickey, and Thomas W. Smoot, both of Atlanta, Ga., assignors to Glasrock Products, Inc., Atlanta, Ga.

Continuation of Ser. No. 140,779, May 6, 1971, abandoned. This application June 11, 1973, Ser. No. 368,725

Int. Cl.[2] B29C 23/00

U.S. Cl. 264—15 3 Claims



1. A method of producing sized refractory spheroids of magnesium oxide directly from crushed particulate magnesium oxide containing material, so as to increase the electrical resistivity of said material comprising:

a. feeding a quantity of said crushed magnesium oxide containing material for a supply reservoir into a plasma zone of a plasma generator capable of melting particulate solids from the outside inwardly;

b. heating said material in said plasma zone to melt said material from the outside inwardly to form individual particulate substantially spherical shaped spheroids;

c. cooling said spheroids in flight to about 5,000° F or less to solidify same;

d. collecting said solidified spheroids.

3,943,212

METHOD FOR SINTER MOLDING PLASTIC ARTICLES

Richard R. Szatkowski, Western Springs, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Continuation of Ser. No. 821,337, May 2, 1969, abandoned. This application Feb. 6, 1974, Ser. No. 440,143

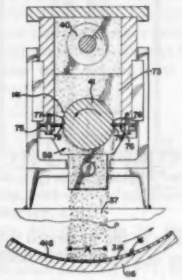
Int. Cl.[2] B06B 1/02

U.S. Cl. 264—24 8 Claims

1. In a method of molding a plastic liner from communited plastics material, said liner having a generally tubular side wall and a bottom, an improvement comprising the steps of:

a. providing a mold, having a horizontal axis, and having a cavity defined by a side wall and an end wall generally corresponding to the shape of said liner;

b. heating said mold to a temperature suitable for fusing said material when deposited thereon;
c. rotating said mold about said horizontal axis; and
d. directing a predetermined position and limited width first stream of said material downwardly generally on opposite sides of a vertical plane passing through said horizontal axis for impinging on the cavity side wall along an axially



extending strip thereof simultaneously along the full length of said cavity side wall, and simultaneously directing a second stream of said material under pressure substantially horizontally so as to impinge on said end wall of said cavity while maintaining said temperature and rotating said mold to progressively assimilate and fuse said material in the form of said liner.

3,943,213
METHOD FOR MANUFACTURING HIGH TEMPERATURE GRAPHITE FIBER-GRAPHITE COMPOSITES

Mack P. Whittaker, Stamford, Conn.; Frederick C. Miller, Johnson City, and Lloyd I. Grindstaff, Elizabethton, both of Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 26,137, April 6, 1970, abandoned. This application Feb. 7, 1972, Ser. No. 224,247
Int. Cl.² B29C *25/00*
U.S. Cl. 264—29 **3 Claims**

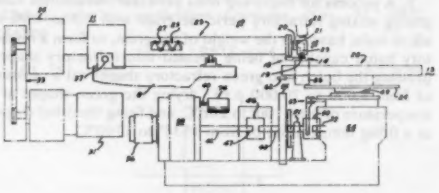
1. A method of forming a graphite composite which consists in
1. heating a graphitizable carbon-forming material to form mesophase;
2. adding a graphitizable carbon fiber thereto;
3. forming or casting the shaped article from (2); and
4. carbonizing and graphitizing the formed article.

3,943,214
METHOD IMPROVEMENTS FOR CONTROLLING PARISON LENGTH

Michael H. Turek, Ledyard, Conn., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 8, 1974, Ser. No. 495,627
Int. Cl.² B29C *17/07*
U.S. Cl. 264—40 **4 Claims**

1. In a method of blow molding hollow articles which includes:
continuously forming a freely pendant hollow thermoplastic parison in the outlet of an extruder head;
moving a carrier in synchronism with formation of said parison to consecutively position molds supported on said carrier beneath the head to receive portions of said parison for blow molding into said articles in cavity sections therein;
sensing the length of a parison section protruding beyond the cavity of successively presented molds; and
generating a control signal in response to said sensing, to regulate and thereby reduce the variability in the amount of said length;
the improvement in said method whereby the amount of such length is regulated without causing a related change in the rheological properties of the thermoplastic forming

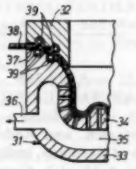


the parison, which improvement comprises, in combination, the step of:
varying the speed of movement of said carrier in response to said signal to vary the rate at which said molds receive consecutive parison portions and therefore regulate the amount of the length of each parison portion protruding beyond the cavity portions thereof.

3,943,215
METHOD FOR THE PRODUCTION OF A FOAM CUSHION WITH A COVERING

Horst Grüne, Leichlingen, and Ulrich Knipp, Schildgen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 4, 1973, Ser. No. 403,593
Claims priority, application Germany, Oct. 11, 1972, 2249652
Int. Cl.² B29D *27/04*
U.S. Cl. 264—46.6 **5 Claims**



1. In a process for the production of a foam cushion with a covering of an elastic textile sheet structure by intimately conforming without permanent deformation said structure to the interior of a complexly contoured mold the improvement comprising
a. draping the textile sheet structure backed by a sealing layer over the vacuum mold;
b. holding the periphery of said sheet structure and sealing layer against the periphery of the mold cavity;
c. applying a suction force through the mold to stretch said sheet structure and sealing layer so that they are drawn into the major surfaces of the mold interior until the elastic limit of the sheet structure and sealing layer is reached; and
d. allowing the sheet structure and sealing layer to slip at portions of the mold cavity periphery while applying suction force so that the sheet structure fully conforms to the interior surface of the mold.

3,943,216
PRODUCTION OF PERICLASE REFRACTORY UTILIZING ALKYD RESINS

Wate Thewis Bakker, Anne Arundel County, Md., assignor to General Refractories Company, Bala Cynwyd, Pa.

Filed Jan. 7, 1974, Ser. No. 431,558
Int. Cl.² C04B *35/04*
U.S. Cl. 264—56 **14 Claims**

1. A process for improved fired periclase refractories comprising mixing refractory periclase grain with 2.5 to 4.5% of alkyd resin, based on the weight of the grain, to form a refractory batch capable of being pressed into refractory shapes, pressing the batch into green refractory shapes aat a pressure of from 8,000 to 20,000 p.s.i., drying the green shapes at a temperature of from 100° to 288°C, and firing the dried shapes at a firing temperature of from 1538° to 1760°C.

3,943,217
PROCESS FOR MANUFACTURING BODIES OF VARIOUS SHAPES FROM INORGANIC POWDERS

Franz Rother, Hardtstrasse 1, 8560 Lauf, Germany

Continuation-in-part of Ser. No. 152,371, June 11, 1971, abandoned. This application July 25, 1973, Ser. No. 382,552
Claims priority, application Germany, June 11, 1970, 2028747
Int. Cl.² C04B *35/00*
U.S. Cl. 264—61 **9 Claims**

1. A process for manufacturing electrical insulator bodies of various shapes from at least 90% crystalline inorganic mineral powders and binders which comprises the following steps:
   1. maintaining in an agitated state the inorganic powders having a size between 0.040 mm and 1.0 mm;
   2. spraying onto said agitated powders at elevated temperature sufficient to liquefy the binder, up to 10 percent by weight of total mixture of a binder consisting essentially of a homogenous fluid mixture of an epoxy resin and hardener so as to form a granular mass;
   3. molding the resulting mixture; and
   4. Hardening the molded mixture at a temperature not exceeding 160° C., thereby producing a compact dense, nonporous ceramic insulator material.

3,943,218
METHOD OF MANUFACTURING SHAPED HOLLOW BODIES

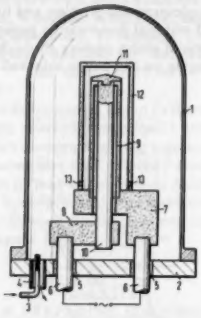
Wolfgang Dietze, Munich, and Andreas Kasper, Garching-Hochbrueck, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed June 14, 1973, Ser. No. 369,830
Claims priority, application Germany, June 15, 1972, 2229229
Int. Cl. B29c *13/04*
U.S. Cl. 264—81 **2 Claims**

1. In a method of manufacturing a shaped hollow body composed of a semiconductor material selected from the group consisting of silicon or silicon carbide wherein said semiconductor material is deposited from a gas phase onto a heated graphite substrate so that the surface of said substrate becomes coated with a layer of said semiconductor material and then the substrate is removed for re-use while obtaining the desired shaped hollow body, the improvement comprising:

heat-treating the graphite substrate prior to deposition of a new layer of said semiconductor material thereon for at least 15 minutes at a temperature in the range of about 1300° C. to about 1600° C. in a gas stream composed of a gas selected from the group consisting of a hydrogen gas nitrogen, and a rare gas said stream having a flow rate in the range of about 200 to 300 liters per hour;

whereby the surface characteristics of said substrate are altered so as to substantially prevent interaction between graphite and said new layer of the semiconductor material and

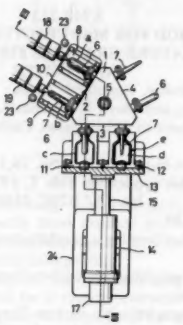


provide re-usability of the so-treated substrate in the formation of a plurality of shaped hollow bodies.

3,943,219
INJECTION BLOW MOLDING METHOD FOR PRODUCING DOUBLE LAYERED HOLLOW ARTICLE

Katashi Aoki, Sakaki, Japan, assignor to Nissei Plastics Industrial Co., Ltd., Japan

Filed Apr. 23, 1974, Ser. No. 463,409
Claims priority, application Japan, Apr. 27, 1973, 48-47230
Int. Cl.² B29C *17/07*
U.S. Cl. 264—97 **11 Claims**



1. A method for injection blow molding a series of double layered articles, comprising the steps of:
   a. injection molding an outer parison about a first one of a pair of core pins;
   b. injection molding an inner parison about a second one of the pair of core pins;
   c. providing an outer layer of a first article within a first one of a pair comprising first and second identical blow molds;
   d. moving the pair of first and second core pins with their respective outer and inner parisons to a position in front of the respective second and first ones of the pair of blow molds;
   e. enclosing the first core pin and outer parison within the second blow mold;
   f. enclosing the second core pin with the inner parison within the outer layer provided in the first blow mold;
   g. blow molding an outer layer of another article from the outer parison enclosed in the second blow mold;
   h. blow molding an inner layer of the first article from the inner parison enclosed within the outer layer provided in

the first blow mold, the inner layer substantially totally in contact with an interior surface of the outer layer;

i. withdrawing both the first and second core pins from the respective second and first blow molds;

j. releasing a finished double layered article from the first blow mold;

k. moving the now-empty first blow mold to the position previously occupied by the second blow mold; and

l. moving the second blow mold to the position previously occupied by the first blow mold, the second blow mold containing the outer layer of another article formed from the outer parison injection molded about the first core pin to provide an outer layer for the next double layered article to be formed.

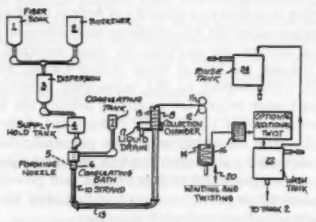
3,943,220
METHOD OF PRODUCING FIBER STRAND

Irvin Barnett, Martinsville, and George Paul Reimschussel, Readington Township, both of N.J., assignors to Johns-Manville Corporation, Denver, Colo.

Continuation of Ser. No. 863,032, Sept. 30, 1969, abandoned, which is a continuation of Ser. No. 641,757, May 29, 1967, abandoned. This application Jan. 25, 1971, Ser. No. 109,549

Int. Cl.² D02G *1/20*; D01D *5/14*

U.S. Cl. 264—103 **5 Claims**



1. A wet process of producing a continuous unitary coherent strand consisting essentially of twist-interlocked, staple inorganic fibers greater than colloidal in size, which comprises:

a. preparing a noncolloidal water suspension of said staple inorganic fibers,

said staple inorganic fibers comprising fibers greater than colloidal in size and having lengths of at least ¼ inch;

said noncolloidal water suspension having a viscosity in the range of 10,000 to 80,000 cps, a temperature in the range of 32° to 180°F, and a solids content in the range of approximately 3 to 7% by weight, and

said noncolloidal water suspension being thickened with a reversibly gelable waterthickening agent to said viscosity range, thus maintaining said staple inorganic fibers noncolloidally dispersed in said water suspension and facilitating the orientation of said fibers generally parallel to each other;

b. forming said noncolloidal water suspension into a strand by extrusion of said suspension containing said fibers oriented generally parallel to each other;

c. converting said reversibly gelable waterthickening agent in the extruded strand into a substantially water-insoluble temporary gel binder which maintains the orientation of the fibers; permits the release of excess water from the strand, and is capable of being reverted to a water-soluble phase for subsequent removal;

d. reducing the water content of the strand and, by twisting the strand, twisting together and mechanically interlocking the oriented staple fibers; and

e. thereafter reverting the substantially water-insoluble temporary gel binder to a water-soluble phase and dissolving the same from the continuous unitary coherent strand of twist-interlocked fibers without destroying the mechanical interlock of the fibers or the continuous unitary nature of the strands.

3,943,221
APPARATUS FOR ATOMIZING AND/OR VAPORIZING LIQUID IN A STREAM OF GAS

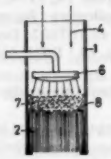
Hermann J. Schladitz, Plaentschweg 74, Munich 60, Germany

Filed Nov. 16, 1973, Ser. No. 416,655

Claims priority, application Germany, Nov. 17, 1972, 2256500

Int. Cl.² B01F *3/04*

U.S. Cl. 261—142 **6 Claims**



1. Apparatus for atomizing and/or vaporizing a liquid in a stream of gas comprising; conduit means and a porous body therein, a source of gas connected to the conduit means, a source of liquid connected to the conduit means so that both gas and liquid are supplied to said porous body, the porous body being a plurality of highly porous lines oriented substantially parallel with the direction of flow of the gas and which are formed by interconnected polycrystalline metal whiskers or metallized non-metallic whiskers, the lines consisting of a plurality of individual substantially parallel whiskers overlapping along the length of the line, the lines forming between them passages through which the gas can flow with the overlapping whiskers providing larger spaces to facilitate flow of the gas through the passages and the passages extending to the downstream end of the whiskers and being open at the downstream end.

3,943,222
MANUFACTURING TEXTILE YARNS

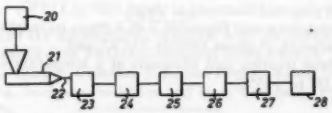
George Waterhouse, Macclesfield, and Walter Parker, Wilmslow, both of England, assignors to Ernest Scragg & Sons Limited, Macclesfield, England

Continuation of Ser. No. 48,054, June 22, 1070, abandoned. This application July 16, 1973, Ser. No. 379,216

Claims priority, application United Kingdom, June 27, 1969, 32680/69

Int. Cl.² B29C *17/02*; D01B *9/00*; D01D *11/00*

U.S. Cl. 264—147 **13 Claims**



1. Process for the production of filaments for textile yarns from synthetic thermoplastic materials which are formable into webs and capable of being converted into filaments by division into narrow strips and stretching to many times their original length, comprising subjecting a film web of the material to forging to effect local weakening along parallel lines by passing the web between a non-yielding profiled roller and a non-yielding counter roller, at least the counter roller being heated to a temperature effective to soften the web to a forgeable condition, such that the thickness of the film web is greatly locally reduced to produce the lines of weakness by simultaneous deformation and lateral displacement of mate-

rial into the regions between the lines of weakness, and thereafter at least partially converting the forged film web to filaments by rupture along the lines of weakness by stretching the film web longitudinally of the lines of weakness.

3,943,223

METHOD OF MANUFACTURING ACRYLIC FIBERS

Ko Kozuka, Takasago; Shunichiro Kurioka, Kobe; Taizo Yasumoto; Shigeru Kobayashi, both of Akashi; Atsuo Kubota, Takasago, and Nobumasa Otoshi, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 169,474, Aug. 5, 1971, abandoned. This application June 14, 1974, Ser. No. 479,334

Claims priority, application Japan, Dec. 2, 1970, 45-107307; Dec. 7, 1970, 45-107602; Dec. 7, 1970, 45-107603

Int. Cl.² D01F 6/18

U.S. Cl. 264—182 **7 Claims**

1. Method of manufacturing modacrylic fibers comprising the steps of

A. dissolving in an organic solvent selected from the group consisting of acetone, acetonitrile, dimethylformamide and mixtures thereof a copolymer consisting essential of
   a. 30 to 80 weight percent acrylonitrile,
   b. 70 to 20 weight percent vinyl chloride or vinylidene chloride, and
   c. 0 to 3 weight percent ethylenically unsaturated monomers having a hydrophillic group and selected from the group consisting of sodium sulfopropyl methacrylate, sodium parastyrene sulfonate, sodium methacryloxybenzene sulfonate, sodium allyl sulfonate, sodium methallyl sulfonate, sodium acrylate, sodium itaconate and mixtures thereof, said copolymer being in a concentration of from 18 to 25%;

B. adding 0.2 to 30.0 weight percent based on the weight of said copolymer of a homopolymer of glycidyl methacrylate or a copolymer consisting essentially of 30 weight percent or more of glycidyl methacrylate polymerized with one or more ethylenically unsaturated monomer selected from the group consisting of methyl acrylate, methyl methacrylate, acrylonitrile, vinyl acetate, vinyl chloride, vinylidene chloride, styrene, vinyl pyrrolidone and the like in an amount of 70 weight percent or less, wherein the specific viscosity of said homopolymer or copolymer of glycidyl methacrylate is from 0.01 to 0.50 as measured at 30°C in 2.0 to 4.0 g/l acetone solution;

C. spinning the resulting spinning solution in at least first and second baths comprising one or more said solvents in concentrations of less than 60 weight percent and 61 to 85 weight percent respectively;

D. leading the thus obtained coagulated filaments successively through one or more subsequent baths containing 60 weight percent or less of said solvent thereby to remove said solvent and to wash said filaments;

E. drying said filaments at about 100° to 135°C;

F. stretching said filaments 2 to 4 times its length at a temperature of about 100° to 135°C; and

G. heat treating said filaments at a temperature of about 135° to 155°C.

3,943,224

METHOD AND APPARATUS FOR MAKING CONTINUOUS LENGTHS OF RESIN TUBES

Frede Hilmar Drostholm, 2950 Vedbaek, Denmark

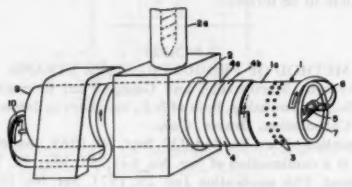
Division of Ser. No. 171,921, Aug. 16, 1971. This application Nov. 24, 1972, Ser. No. 309,124

Claims priority, application Denmark, Aug. 21, 1970, 4315/70

Int. Cl.² B29D 23/04

U.S. Cl. 264—209 **6 Claims**

1. A method for making tubes of resin material which method comprises continuously winding about a supporting structure an endless carrier strip in a plurality of nonrotative helical turns having their edges abutting each other to provide an uninterrupted cylindrical surface, advancing the wound turns axially thereof in a helical path by the use of power means, rotating the supporting structure by the use of independent power means at a speed equal to the component of the helical motion of the strip measured in a plane perpendicular to the axis of the supporting structure, but in a direction opposite to such component, thereby providing axial but nonrotative motion of said cylindrical surface, continuously extruding resin material in a soft condition in tubular form onto said axially moving cylindrical surface, and effecting solidification of the resin material while it is being carried on said surface.



2. Apparatus for making tubes of resin material, comprising a rotative supporting structure, a carrier strip wound around the supporting structure in a plurality of helical turns arranged with their edges adjacent and abutting each other to provide a cylindrical surface for carrying the resin material, power means for driving the helical turns of said carrier strip in a helical path with respect to the supporting structure, and independent power means for rotatively driving the supporting structure at a speed equal to the component of the helical motion of the strip measured in a plane perpendicular to the axis of the supporting structure, but in a direction opposite to such component, the combined action of said power means and said independent power means providing axial but nonrotative movement of said cylindrical surface.

3,943,225

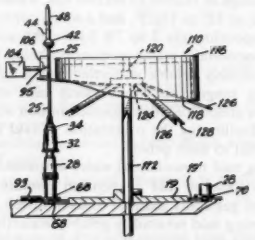
CATHETER

Wilbur R. Koehn, Sands Point, N.Y., assignor to ProMed Laboratories Inc., Huntington Station, N.Y.

Continuation of Ser. No. 148,103, May 28, 1971, abandoned. This application Dec. 3, 1973, Ser. No. 420,881

Int. Cl.² B29C 13/00; B29D 9/00

U.S. Cl. 264—255 **25 Claims**



1. The method of making a plastic catheter with the aid of a mandrel having an outside diameter corresponding to the diameter of the lumen of the catheter to be formed and a die wiper having at one end an orifice of somewhat larger diameter than the outside diameter of said mandrel and further having a reservoir in open communication with said orifice, said method comprising the steps of, placing said die wiper about a first end of said mandrel with the said orifice thereof facing in the same direction as said first end of said mandrel, applying a mass of an at least semi-viscous liquid plastic mate-

rial on said mandrel at least adjacent said reservoir of said die wiper on the side thereof opposite said mandrels' first end, positioning said mandrel substantially vertically, structurally supporting only one of said die wiper or said mandrel and relatively moving said die wiper from said first end of the mandrel to the opposite end thereof in a manner such that the mandrel passes freely through said die wiper and the latter engages the mass of liquid plastic material previously applied to said mandrel and thereby wipes a coating of said plastic material onto the exterior of said mandrel, and then curing said liquid plastic material on said mandrel thereby forming a flexible catheter thereon.

3,943,226
FLUIDS PURIFICATION

Anthony Miles Robert Difford, Stockton-On-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Feb. 12, 1974, Ser. No. 441,818

Claims priority, application United Kingdom, Feb. 27, 1973, 9474/73

Int. Cl.² B01D *15/00, 57/00*

U.S. Cl. 423—230 **9 Claims**

1. In a process for treating a gaseous process fluid over a solid catalytic material, solid hydrogen sulphide absorbing material, or both, the improvement which comprises contacting said gaseous process fluid at a temperature up to 500°C with discrete pieces of one or more alkali metal aluminates in the beta form, prior or simultaneous to treatment with said catalytic or absorbing material whereby the access of strongly acidic impurities in the fluid to said catalytic or absorbing material is diminished or prevented.

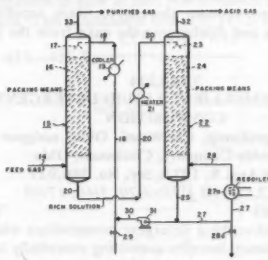
3,943,227
POLYOLEFIN COMPOSITION AND USE OF SAME IN ALKALINE SOLUTIONS

Henry G. Schutze, and Hulen L. Wilder, Baytown, both of Tex., assignors to Exxon Research & Engineering Co., Linden, N.J.

Division of Ser. No. 278,143, Aug. 4, 1972. This application Dec. 23, 1974, Ser. No. 535,318

Int. Cl.² B01D *53/34*

U.S. Cl. 423—232 **9 Claims**



1. In the process of separating weakly acidic gases selected from the group consisting of hydrogen sulfide, carbon dioxide and mixtures thereof from gaseous mixtures by contact with an aqueous potassium carbonate solution, the improvement comprising contacting said gaseous mixture with said carbonate solution in the presence of a contacting article comprising a solid polyolefin resin polymer of an alpha monoolefin having 2 to 8 carbon atoms in the molecule, having admixed therein a stearate radical unassociated with barium cation and an (antifoaming) amount of a (finely divided) water soluble barium compound (which forms) capable of forming sufficient water insoluble barium stearate soaps with said stearate radical after being (leaching) leached from said article by said alkaline solution and thus preventing (to prevent) foaming in said alkaline solution which would otherwise be caused by said stearate radicals unassociated with said barium cation.

3,943,228
PROCESS FOR EFFICIENTLY PURIFYING INDUSTRIAL GAS

Claude Dezael, Maisons-Laffitte; Jean-Pierre Poitevin, Marly-le-Roi, and Philippe Renault, Noisy-le-Roi, all of France, assignors to Institut Francais du Petrole, des Carburants & Lubrifiants, Paris, France

Filed Nov. 27, 1973, Ser. No. 419,383

Claims priority, application France, Nov. 27, 1972, 72.42158

Int. Cl.² C01C *3/00*

U.S. Cl. 423—237 **8 Claims**

1. A process for efficiently removing sulfur dioxide and ammonia from an industrial waste gas containing each of them in a proportion lower than about 300 ppm by volume, comprising the steps of:

a. contacting the waste gas with a dilute aqueous solution of ammonium sulfate, to absorb sulfur dioxide and ammonia and form ammonium sulfites dissolved in said dilute ammonium sulfate solution at a concentration of about 0.02–0.5 mole of ammonium sulfite per liter;

b. separating resultant purified gas from the solution obtained in step (a);

c. dividing the separated solution into separate portions;

d. passing a first portion of separated solution to the anodic compartment of an electrochemical cell having a cation-permeable membrane separating the anodic compartment from the cathodic compartment, and passing a second portion of said separated solution to the cathodic compartment of said cell and electrolyzing said portions in said compartments to convert sulfite to sulfate in the anodic compartment and transfer ammonium ions through said cation-permeable membrane to produce a solution of neutral ammonium sulfite in the cathodic compartment;

e. discharging the solution of neutral ammonium sulfite from the cathodic compartment and thereafter contacting it with a molecular oxygen containing gas, thereby converting said neutral ammonium sulfite to ammonium sulfate;

f. admixing at least a fraction of the solution discharged from the anodic compartment with at least a fraction of the solution discharged from the cathodic compartment and subsequently contacted with a molecular oxygen containing gas; and

g. recycling at least a portion of said admixed fractions to the step (a) as the dilute aqueous solution of ammonium sulfate.

3,943,229
METHOD OF REMOVING IODINE AND COMPOUNDS THEREOF FROM GASEOUS EFFLUENTS

Ronald L. Keener, Camden, N.J., and Paul A. Kittle, Gardenville, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Nov. 30, 1973, Ser. No. 420,422

Int. Cl.² B01D *53/34*

U.S. Cl. 423—240 **15 Claims**

1. A method for removing iodine and compounds thereof from gaseous streams which comprises contacting the stream with a mass or bed of crosslinked acrylic anion exchange resin, derived from at least one acrylic monomer selected from the group consisting of branched and straight chain alkyl acrylate esters containing 1 to 6 carbon atoms, substituted alkyl acrylate esters, aromatic acrylate esters, acrylic acid, acrylate salts, acryloyl halides, acrylonitrile derivatives and acrylamide derivatives, and at least one crosslinking monomer, containing two or more reactive unsaturated carbon-carbon bonds.

3,943,230

PROCESS FOR THE REMOVAL OF SULFUR OXIDE FROM WASTE GAS

Yoshikazu Yamamichi, and Jun-ichi Nagao, both of Okayama, Japan, assignors to The Dowa-Mining Co., Ltd., Tokyo, Japan

Filed Oct. 9, 1973, Ser. No. 404,201
Int. Cl.² C01B *17/00*
U.S. Cl. 423—242 2 Claims

1. A process for removing sulfur oxide from waste gas which comprises:

a. subjecting the waste gas to a countercurrent flow of an absorbent solution of 0.05 to 1 mol/liter of basic aluminum sulfate, said solution having a basicity of 0 to 60%, and containing 20 g/l of a manganese salt to absorb the sulfur oxide into the solution and oxidize the absorbed sulfur oxide by means of the manganese salt; and

b. blowing air through the absorbent solution from step a) to oxidize sulfite ion in the solution to sulfate ion;

c. neutralizing the solution from step a) by adding calcium carbonate or calcium hydroxide whereby gypsum is precipitated; and

d. separating the gypsum and reusing the solution as the absorbent solution in step (a).

3,943,231

PROCESS FOR MAKING CONDENSED ALUMINUM PHOSPHATES

Horst-Dieter Wasel-Nielen, Hurth-Hermulheim; Gero Heymer, Erftstadt Liblar, and Peter Wirtz, Konigstein, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed June 18, 1973, Ser. No. 370,626
Claims priority, application Germany, June 21, 1972, 2230175
Int. Cl.² C01B *15/16, 25/26*
U.S. Cl. 423—311 4 Claims

1. A process for spray-drying solutions or suspensions of aluminium orthophosphates containing P_2O_5 and Al_2O_3 in a molar ratio equal to or greater than 1.5:1 in a spraying tower at elevated temperatures which comprises spraying the said solutions or suspensions through a flame zone, the temperatures within the said spraying tower being between 300° and 600°C and off-gases escaping from the said tower having temperatures between 100° and 500°C with the resultant formation of condensed aluminium phosphates containing P_2O_5 and Al_2O_3 in a molar ratio equal to or greater than 1.5:1, being X-ray amorphous and having an apparent density between 50 and 200 grams/liter.

3,943,232

PROCESS FOR THE DEFLUORINATION OF DILUTE FLUORINE CONTAINING AQUEOUS ACID SOLUTIONS

Everett N. Case, Airville, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 4, 1974, Ser. No. 448,153
Int. Cl.² C01B *25/16*
U.S. Cl. 423—317 7 Claims

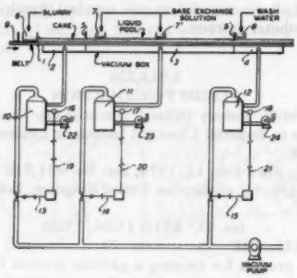
1. In a process for the defluorination of a dilute fluorine-containing aqueous phosphatic acid solution derived from the process water of a wet process phosphoric acid plant said solution containing less than 3 percent P_2O_5 the improvement which comprises heating the solution to a temperature in the range of about 80°C. -100°C. in the presence of a solid source of Ca^{++} ions selected from the group consisting of calcium sulfates, calcium phosphates and phosphate rock, for a length of time sufficient to precipitate calcium fluoride from said aqueous acid solution and thereby increase the net available H^+ ions associated with the original phosphatic solution.

3,943,233

PROCESSING FINELY DIVIDED SOLIDS ON A CONTINUOUS VACUUM BELT FILTER

David B. Swanson, Cranford, and Walter L. Haden, Jr., Westfield, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Menlo Park, Edison, N.J.

Filed Feb. 20, 1974, Ser. No. 444,173
Int. Cl.² C01B *33/32;* B01D *33/04*
U.S. Cl. 423—332 10 Claims



1. A continuous method for subjecting a mass of finely divided solid particles serially to a liquid-solid mass transfer unit operation and to another liquid-solid operation carried out at a higher rate than the mass transfer operation which comprises feeding a liquid slurry of the finely divided particles to a moving continuous horizontal vacuum belt filter provided with a divided vacuum box wherein each division is associated with a separate liquid receiver and vacuum pressure controls, applying sufficient vacuum to the slurry after it is charged to the belt to produce a smooth superficially dried cake containing liquid in voids between the particles, as the cake continues to travel across said vacuum box contacting it with a solution capable of undergoing a mass transfer reaction with the particles while applying vacuum controlled at a level that will maintain a quiescent pool of liquid above the cake over a substantial length of the travle of the cake on the belt, draining sufficient liquid from the cake to form a cake having a smooth crack-free surface and containing liquid in voids between particles in the cake, adding another liquid to the cake while applying sufficient vacuum thereto to drain rapidly liquid through the cake and discharging the cake from the belt.

3,943,234

ACIDIC EMOLLIENT LIQUID DETERGENT COMPOSITION

Charles L. Roggenkamp, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 9, 1973, Ser. No. 386,929
Int. Cl.² C11D *1/75, 3/20, 3/46, 17/08*
U.S. Cl. 424—343 7 Claims

1. A liquid dishwashing detergent composition which provides skin emolliency benefits consisting essentially of

i. from about 1% to about 10% by weight of an amine oxide of formula $RR'R''N \rightarrow O$ wherein R is an alkyl group containing from about 8 to about 18 carbon atoms and wherein R' and R'' are each C_1–C_4 alkyl groups;

ii. from about 1% to about 5% by weight of a C_{15}–C_{22} monohydric alcohol serving as an emollient;

iii. from about 1 to about 5% by weight of an organic acidic pH controlling agent;

iv. from about 5% to about 50% by weight of a noninterfering auxiliary surfactant selected from the group consisting of water-soluble C_{10}–C_{14} olefin sulfonates, C_{10}–C_{22} alkyl sulfates and alkyl ether sulfates containing up to 30 ethylene oxide groups and mixtures thereof;

v. the balance of said composition comprising a liquid carrier selected from the group consisting of water and mix-

tures thereof with C_8–C_4 alcohols; the pH of a 0.2% by weight aqueous solution of said composition lying within the range 4–6.9.

7. A process for adsorbing emollient materials on skin comprising contacting said skin with an aqueous mixture comprising from about .001% to about 1% by weight of an amine oxide of the formula $RR'R''N \rightarrow O$ wherein R is an alkyl group containing from about 8 to about 18 carbon atoms and wherein R' and R'' are each C_1–C_4 alkyl groups, from about .005% to about 5% by weight of a non-interfering auxiliary surfactant selected from the group consisting of water-soluble C_{10}–C_{14} olefin sulfonates, C_{10}–C_{22} alkyl sulfates and alkyl ether sulfates containing up to 30 ethylene oxide groups and mixtures thereof, and from about 0.001% to about 1% by weight of a C_{16} monohydric alcohol serving as an emollient, at a pH of from about 4 to about 6.9.

3,943,235
PROCESS FOR PRODUCING SILVER AZIDE

Thomas S. Costain, Sparta, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

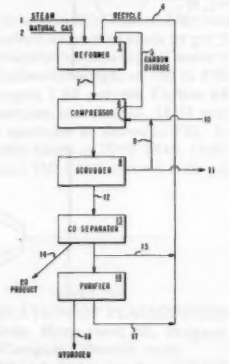
Filed July 11, 1974, Ser. No. 487,836
Int. Cl.² C01B *21/08*
U.S. Cl. 423—410 **5 Claims**

1. A process for producing a silver azide product in a free-flowing, dense crystalline form having good explosion initiating properties, which comprises preparing a solution of silver azide in aqueous ammonia solution by reacting silver nitrate and sodium azide, removing ammonia from the solution by distillation until incipient crystallization of silver azide from the solution takes place, adding a small amount of an acid to induce the formation of seed crystals of silver azide, continuing the distillation of the ammonia until crystallization of the silver azide is substantially complete while subjecting the liquid to vigorous agitation, whereby the silver azide is produced predominantly in the form of cubical crystals, and separating the resulting silver azide crystals from the liquid mixture.

3,943,236
REFORMING PROCESS FOR CARBON MONOXIDE

Ralph V. Green, Charleston, W. Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 130,613, April 2, 1971, abandoned. This application Oct. 17, 1973, Ser. No. 407,263
Int. Cl.² C01B *31/18*
U.S. Cl. 423—415 R **3 Claims**

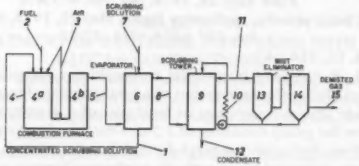


1. In the manufacture of carbon monoxide by the steam reforming of hydrocarbons in the presence of a nickel catalyst under pressures of 20 to 500 psig at temperatures of 650° to 1000°C. to produce a reformer effluent which contains hydrogen, carbon dioxide, and carbon monoxide, and thereafter compressing said reformer effluent and first separating the carbon dioxide from the reformer effluent and then separating and recovering the carbon monoxide from the reformer effluent, the improvement comprising recycling and preheating at least a portion of the reformer effluent remaining after the carbon monoxide has been separated to the feed to the reformer inlet and adding carbon dioxide to the reformer feed in an amount of at least one mole of carbon dioxide for every mole of hydrogen in the recycle stream.

3,943,237
PRODUCTION OF SULFURIC ACID FROM THE SCRUBBING SOLUTION OBTAINED IN THE DESULFURIZATION OF COKE-OVEN GAS

Herbert Furkert, Grosskonigsdorf, Germany, assignor to Chemiebau Dr. A. Zieren GmbH & Co. KG., Cologne, Germany

Filed Oct. 16, 1973, Ser. No. 406,799
Claims priority, application Germany, Oct. 19, 1972, 2251296
Int. Cl.² C01B *17/50*
U.S. Cl. 423—542 **12 Claims**



1. A process for the production of sulfur dioxide from a scrubbing solution obtained by desulfurization of coke-oven gas with ammonia, said scrubbing solution comprising ammonium thiocyanate, ammonium thiosulfate, sulfur, free ammonia and ammonium salts of weak acids having a dissociation constant at room temperature of less than about $1 - 5 \times 10^{-2}$, which comprises:

a. admixing said scrubbing solution with an amount of sulfuric acid sufficient to react with both said free ammonia and said ammonium salts of said weak acids to form ammonium sulfate under conditions such that said ammonium thiocyanate and ammonium thiosulfate remain in solution;

b. concentrating the resultant scrubbing solution to a water content of about 40–78% by weight under conditions to substantially prevent undesired oxidation of ammonium thiocyanate according to the equation $NH_4SCN + O_2 \rightarrow HCN + SO_2 + NH_3$ and the subsequent entrance of HCN into the gaseous phase; and

c. combusting the thus-concentrated solution to form sulfur dioxide according to the following reactions:

$$NH_4SCN + 3\ O_2 = N_2 + 2\ H_2O + CO_2 + SO_2$$

$$(NH_4)_2S_2O_3 + 2.5\ O_2 = N_2 + 4\ H_2O + 2\ SO_2$$

$$(NH_4)_2SO_4 + O_2 = N_2 + 4\ H_2O = SO_2$$

$$S + O_2 = SO_2.$$

3,943,238

METHOD FOR THE PREPARATION OF MEDICINAL CAPSULES

Toshiyuki Kobayashi, Yokohama; Kensuke Sunazuka, Kawasaki; Takeshi Mayama, Chigasaki, and Akira Okada, Zushi, all of Japan, assignors to Meija Seika Co., Ltd., Japan

Filed Oct. 29, 1973, Ser. No. 410,334
Claims priority, application Japan, Nov. 1, 1972, 47-108876
Int. Cl.[2] A61J 3/07; A61K 9/48
U.S. Cl. 424—37 1 Claim

1. In a method for preparation of a hard gelatin capsule disintegrating in about 2 to about 22 minutes, said capsule containing a measured dose of midecamycin antibiotic as a medicine for delivery to the stomach when said capsule is ingested orally, said medicine otherwise tending in time to retard the disintegration of said hard gelatin capsule to 19 to 21 minutes, the improvement wherein the increase in the hard gelatin capsule disintegration time with capsule age is at least partially arrested, and improved stability of the disintegration time, to within 2 to 6 minutes, is achieved, which comprises incorporating into said capsule at least about 25 parts by weight of a pharmaceutically acceptable additive consisting essentially of casein per 70 parts by weight of midecamycin.

3,943,239

STABILIZED INSECTICIDAL COMPOSITION

Takashi Yamaguchi, Takarazuka; Yasuo Abe, Nishinomiya, and Yoshio Fujita, Kobe; all of Japan, assignors to Sumitomo Chemical Co., Ltd. and Dai-Nippon Jachugiku Co., Ltd., both of Osaka, Japan

Filed May 28, 1974, Ser. No. 473,474
Claims priority, application Japan, May 25, 1973, 48-58980
Int. Cl.[2] A01N 9/28, 17/02
U.S. Cl. 424—43 2 Claims

1. A stabilized insecticidal composition comprising an insecticidally effective amount of a synthetic pyrethroidal insecticide and as a stabilizer at least one of a member selected from the group consisting of 3,5-di-t-butyl-hydroxyanisole and 2,2'-methylenebis(6-t-butyl-4-ethylphenol), wherein said synthetic pyrethroidal insecticide is chrysanthemum-mono-carboxylic acid 5-propargyl-2furyl methyl ester, chrysanthemum-monocarboxylic acid 2-methyl-5-propargyl-3-furyl methyl ester, chrysanthemum-monocarboxylic acid 5-propargyl-α-ethynyl-2-furyl methyl ester, chrysanthemum-monocarboxylic acid 5-benzyl-3-furyl methyl ester or 2,2-dimethyl-3-(2,2-dichlorovinyl)cyclopropane-1-carboxylic acid 5-benzyl-3-furyl methyl ester, and the proportion of said stabilizer is 0.05 to 3% by weight of the synthetic pyrethroidal insecticide.

3,943,240

TOOTHPASTE

Thomas James Delaney, Piscataway, and William Grant Pierson, Flanders, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 389,827, Aug. 20, 1973, abandoned, which is a continuation-in-part of Ser. No. 295,094, Oct. 4, 1972. This application Apr. 30, 1974, Ser. No. 465,476
Int. Cl.[2] A61K 7/16
U.S. Cl. 424—49 9 Claims

1. A dental cream containing an abrasive content comprising at least about 20 percent sodium bicarbonate in a vehicle containing sufficient liquids, said vehicle consisting essentially of about 5 to 35 percent water and sufficient viscous water miscible polyol humectant or mixtures thereof, and a sufficient amount of gelling or thickening agent to impart to the dental cream the pasty consistency, body and non-tacky nature which is characteristic of conventional dental creams or toothpastes, and over 1 percent of a water insoluble dental abrasive material compatible with said bicarbonate in the dental cream, said sodium bicarbonate being primarily in the undissolved solid state, said dental cream having a granular textured appearance comprising a substantially dispersed non-crystalline appearing granulate of macroscopic crystalline bicarbonate granules in an otherwise continuous matrix.

3,943,241

CARIOSTATIC COMPOSITION

Ray H. Anderson, Osseo, and Albert L. Saari, Minneapolis, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Aug. 30, 1971, Ser. No. 176,275
Int. Cl.[2] A61K 7/22
U.S. Cl. 424—54 10 Claims

1. A cariostatic composition for application to teeth to reduce carries, said composition comprising a solvent and a cariostatic agent selected from the group consisting of alkali metal amino acid phosphates, alkaline earth metal amino acid phosphates and their diphosphates, said cariostatic agent being present in an amount of from 1 to 25% by weight based on the weight of the solvent.

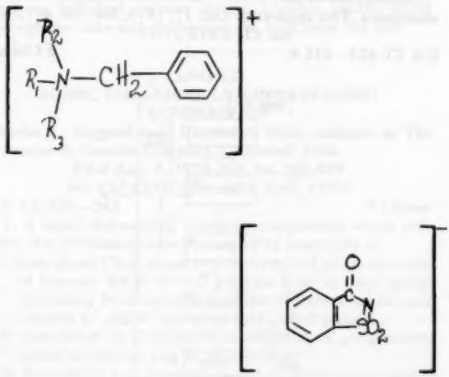
3,943,242

DEODORANT COMPOSITION CONTAINING A QUATERNARY AMMONIUM SACCHARINATE SALT

Arnold W. Fogel, Montvale, and Anthony F. Mercurio, Rivervale, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 10, 1974, Ser. No. 459,526
Int. Cl.[2] A61K 7/32
U.S. Cl. 424—65 11 Claims

1. An improved deodorant composition comprising from about 5 to 10 percent by weight of an anionic base material which is an alkali metal salt of a long chain alkanoic acid of from 16 to 22 carbon atoms, from about 80 to 90 percent by weight of a lower alkanol and from 0.05 to 1 percent by weight of a quaternary ammonium saccharinate salt represented by the following formula:



wherein R_1 is alkyl having from 8 to 16 carbon atoms and R_2 and R_3 are either methyl or ethyl; all percentages based on the weight of the total composition.

3,943,243

TOILET BOWL SANITIZER AND BATHROOM DEODORIZER

John F. Kook, Parma, Ohio, assignor to E. I. Du Pont de Nemours and Co., Wilmington, Del.

Continuation-in-part of Ser. No. 814,710, April 9, 1969, abandoned. This application Oct. 19, 1972, Ser. No. 298,836

Int. Cl. A61l *13/00*

U.S. Cl. 424—76 2 Claims

1. A method for continuously dispensing sodium bisulfate at a slow rate to a toilet while at the same time providing a pleasant odor in the environment of the toilet by placing in the bowl of said toilet, above the water line, a shaped solid in the form of a cake having a composition comprising:

A. 10% to 65%, by weight, of sodium bisulfate, and

B. 90% to 35%, by weight, of p-dichlorobenzene or naphthalene or a mixture of the two.

3,943,244

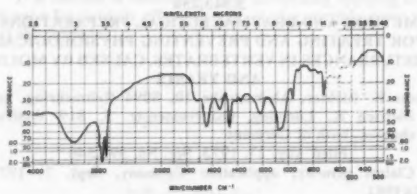
ANTI-MICROBIAL FACTORS EFFECTIVE AGAINST BACILLIC AND COCCIC INFECTIONS

Elton S. Cook, Cincinnati, Ohio, and Norbert J. Berberich, Jr., Burlington, Ky., assignors to Stanley Drug Products, Inc., Portland, Oreg.

Continuation-in-part of Ser. No. 117,765, Feb. 22, 1971, abandoned. This application Oct. 26, 1972, Ser. No. 301,239

Int. Cl.² A61K *35/12*, *35/56*

U.S. Cl. 424—95 3 Claims



1. The anticoccic, antibacillic, Factor Z derived from mammalian brain and spleen alcohol extracts by gel filtration having the following characteristics: a slightly water soluble, waxy material having a molecular weight of 750 to 850; an elemental analysis of Nitrogen, 1.68 percent, Carbon 68.47 percent, Hydrogen, 11.47 percent, and Oxygen, 18.38 percent; and the following infrared spectrum as shown in FIG. 1: broad band 3400–3300, and other bands at 2910, 2840, 1640, 1540, 1460 1220, 1070, 960 and 750 CM^{-1} (mixed with potassium bromide).

3,943,245

PURIFICATION OF PLASMINOGEN

Robert M. Silverstein, Homewood, Ill., assignor to Armour Pharmaceutical Company, Phoenix, Ariz.

Filed Feb. 14, 1974, Ser. No. 440,206

Int. Cl.² A61K *35/14*, *35/16*; C07G *7/00*, *7/026*

U.S. Cl. 424—101 3 Claims

1. In the affinity chromatography method of isolating and purifying plasminogen from mammalian and human plasmas and Cohn III fractions comprising the steps of extracting the plasminogen, supplying the plasminogen-bearing extract to a L-lysine sepharose column, washing said column to elute impurities and then eluting the plasminogen, the improvement to the method comprising using a solution comprising about 0.5 molar sodium chloride in the step of washing the column.

3,943,246

ORGANIC COMPOUNDS

Egon Stürmer, Riehen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 376,410, July 5, 1973, abandoned. This application Aug. 28, 1974, Ser. No. 501,336

Claims priority, application Switzerland, July 10, 1972, 10303/72; Oct. 25, 1972, 15618/72

Int. Cl.² A61K *37/00*

U.S. Cl. 424—177 6 Claims

1. A method of treating impotency in a human male in need of said treatment which comprises administering oxytocin at a dosage of 300 to 1500 I.U. daily.

3,943,247

TREATMENT OF BACTERIAL INFECTIONS WITH GLUCAN COMPOSITIONS

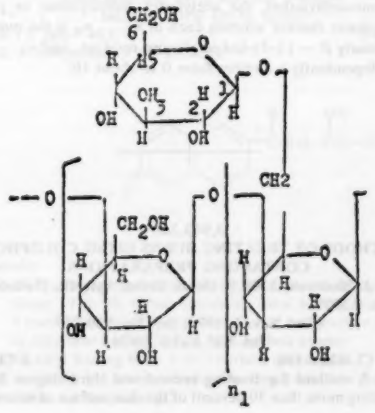
Nobuhiko Komatsu; Sumio Sakai; Gosaku Saito; Syoichi Kikumoto, and Keitaro Kimura, all of Tokyo, Japan, assignors to Kaken Kagaku Kabushiki Kaisha and Taito Co., Ltd., both of, Japan

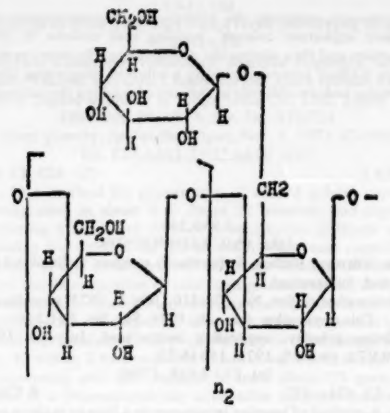
Continuation-in-part of Ser. No. 255,682, May 22, 1972, Continuation of Ser. No. 37,029, May 13, 1970, abandoned, which is a continuation-in-part of Ser. No. 766,630, Oct. 10, 1968. This application July 11, 1973, Ser. No. 378,054

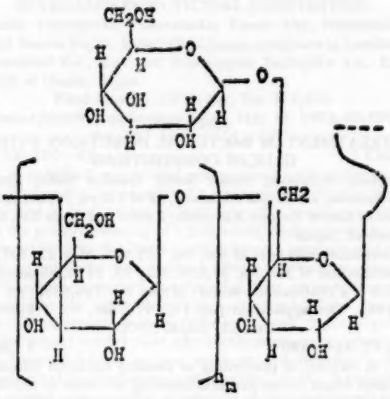
Int. Cl.² A61K *31/70*

U.S. Cl. 424—180 5 Claims

1. A method of preventing or treating bacterial infectious diseases which comprises administering to a man or animal in need of said treatment or in need of prevention of bacterial infectious diseases, an antibacterially effective amount of a compound which is a glucan having the following formula:







the methylether, the carboxymethylether, the diethylaminoethylether, the acetylester, sulfonylester or phosphorylester thereof wherein each of $n_1 \ldots n_m$ is the number of linearly β — (1-3)-linked glucose residues, said $n_1 \ldots n_m$ is independently a number from 0 to about 10.

3,943,248

METHODS OF TREATING BURNS USING COLOPHONY CONTAINING PREPARATIONS

Max J. Shulman, 3209 S. Ocean Drive, Apt. 4L, Hallandale, Fla. 33009

Filed Nov. 4, 1974, Ser. No. 520,737

Int. Cl.² A61K *35/78*

U.S. Cl. 424—196 **6 Claims**

1. A method for treating second and third degree burns covering more than 30 percent of the skin surface of an animal or human body which comprises applying to the burned skin surface a pharmaceutical preparation comprising between about 25 and 60 weight percent colophony dissolved in a pharmaceutically acceptable vegetable oil.

3,943,249

O,O-DIETHYLTHIONOPHOSPHONYL-α-OXIMINO-5-CHLORO-2-THIENYL ACETONITRILE AS INSECTICIDES

Robert George Stein, Kenosha, Wis.; Aldo Joseph Crovetti, Lake Forest, and Terry Lee Couch, Waukegan, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 215,957, Dec. 20, 1971, abandoned. This application Sept. 20, 1973, Ser. No. 399,762

Int. Cl.² A01N *9/36*

U.S. Cl. 424—202 **8 Claims**

1. A method of controlling insects and mites which comprises contacting such insects and mites with an insecticidally effective amount of O,O-diethylthionophosphonyl-α-oximino-5-chloro-2-thienyl acetonitrile.

3,943,250

METHOD AND PHARMACEUTICAL PREPARATIONS FOR TREATING AND PREVENTING PHYSIOLOGICAL DISTURBANCES IN VERTEBRATES, CAUSED BY MOLDS AND YEASTS

Hans K. Richter, Ahornstrabe 10, 8094 Reitmehring, and Dietrich K. Lüdeling, Ostpreussenstr. 5, 819 Wolfratshausen, both of Germany

Filed Aug. 27, 1973, Ser. No. 391,546

Claims priority, application Germany, Sept. 7, 1972, 2243982

Int. Cl.² A01N *9/00, 9/22;* **A61K** *31/53;* **A61L** *13/00*

U.S. Cl. 424—249 **5 Claims**

1. A method of combatting in mammals herd sterility due to consumption of feed contaminated with mycetes causing herd sterility which comprises internally administering to said mammal hexamethylenetetramine rhodanide in an effective amount for combatting said herd sterility.

3,943,251

OPHTHAMOLOGICAL USE OF HYDRASTIS COMPOUNDS

Norman B. Medow, 18 Sheridan Road, Scarsdale, N.Y. 10583, and Joseph J. Greco, 68 Alderbrook Road, Topsfield, Mass. 01983

Division of Ser. No. 373,996, June 6, 1973, Pat. No. 3,903,282. This application Jan. 27, 1975, Ser. No. 544,044

Int. Cl.² A61K *31/47*

U.S. Cl. 424—258 **7 Claims**

1. The process of dilating human eye pupils which comprises topically applying a sufficient amount of berberine to effectively dilate said pupils.

3,943,252

POLYURETHANE CASEIN COATING COMPOSITION

Walter Schroer; Helmut Reiff, both of Cologne; Dieter Dieterich, Leverkusen, and Karl Berger, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 285,708, Sept. 1, 1971, abandoned
Filed Feb. 25, 1974, Ser. No. 445,704
Claims priority, application Germany, Sept. 8, 1971, 2144878
Int. Cl.² B32B 27/40, 9/04; C08L 89/02
U.S. Cl. 428—262 10 Claims

1. A coating composition comprising the reaction product of (a) solubilized casein (b) water-dispersible polyurethane and (c) formaldehyde, in such proportions that from about 10 to about 1,000 parts by weight of (b) and from about 1 to about 60 parts by weight of (c) are present per 100 parts by weight of solid material (a) wherein the reactants are reacted at temperatures between 40° and 140°C.

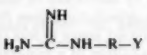
3,943,253

GUANIDO ACIDS AS FUNGICIDES

Sol J. Barer, 18-01 Fox Run Drive, Plainsboro, N.J. 08536, and Patti L. Kostrzewski, 301 Maple Ave., North Plainfield, N.J. 07060

Filed June 27, 1974, Ser. No. 483,580
Int. Cl.² A01N 9/20, 9/24
U.S. Cl. 424—319 4 Claims

1. A method of destroying fungi comprising applying to the fungi a fungicidally effective amount of a guanido compound of the formula:



where R is C_nH_{2n} and *n* is an integer of 1 to 11 and Y is the group —COOH or a salt thereof.

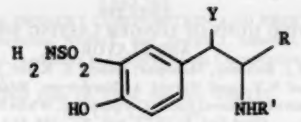
3,943,254

BETA-ADRENERGIC ANTAGONISTS

Donald F. Colella, West Norriton, Pa., and Carl Kaiser, Haddon Heights, N.J., assignors to Smithkline Corporation, Philadelphia, Pa.

Division of Ser. No. 389,772, Aug. 20, 1973, Pat. No. 3,860,647. This application Nov. 7, 1974, Ser. No. 521,597
Int. Cl.² A61K 31/165
U.S. Cl. 424—321 7 Claims

1. A pharmaceutical composition having β-adrenergic antagonist activity comprising an amount sufficient to produce β-adrenergic antagonist activity of a compound of the formula



R is hydrogen or alkyl of C_1–C_4;
R′ is alkyl of C_1–C_6, cycloalkyl of C_3–C_6, $XC_6H_4(CH_2)_2CH(CH_3)$, $XC_6H_4(CH_2)_2C(CH_3)_2$, $XC_6H_4CH_2C(CH_3)_2$, or $XC_6H_4CH_2CH(CH_3)$;
X is hydrogen, hydroxy, or methoxy; and
Y is hydrogen or hydroxy
or a nontoxic pharmaceutically acceptable salt thereof, and a pharmaceutical carrier therefor.

3,943,255

ALKYL POLYMAINE MICROBIOCIDES

John D. Newkirk, Downers Grove, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed May 22, 1974, Ser. No. 472,261
Int. Cl.² A01N 9/20, 9/24
U.S. Cl. 424—329 8 Claims

1. A bactericidal or fungicidal composition comprising an aqueous carrier and a bactericidally or fungicidally effective amount of at least 25 ppm of a mixture of 1 mole of N-alkyl triethylene diamine where alkyl is C_8–C_{18} with 0.5–3.0 moles of epihalohydrin and subsequently quaternized with an excess of tri lower alkylamine.

3,943,256

ANTIPSYCHOTIC AGENTS

Bernard M. Regan, Chicago, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Division of Ser. No. 373,547, June 25, 1973, abandoned. This application Aug. 5, 1974, Ser. No. 494,809
Int. Cl.² A61K 31/08
U.S. Cl. 424—342 1 Claim

1. The method of convulsive therapy comprising inducing a therapeutic convulsion in an animal by administering to said animal an effective amount for inducing a therapeutic convulsion of the compound $CH_2F—O—CH_2CF_2CF_3$ in vapor form by inhalation while maintaining respiration of said animal.

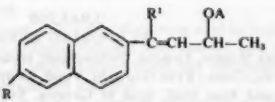
3,943,257

4-ALKYL-4-NAPHTHYL BUTENES

Paul L. Anderson, Dover, N.J., and Darryl A. Brittain, New York, N.Y., assignors to Sandoz, Inc., E. Hanover, N.J.

Filed Aug. 20, 1973, Ser. No. 390,034
Int. Cl.² C07C 69/72, 69/02
U.S. Cl. 260—483 9 Claims

1. A compound of the formula



wherein
R is a hydrogen atom, halo having an atomic weight of from about 19 to 80, difluoromethoxy, alkyl having from 1 to 4 carbon atoms, alkoxy having from 1 to 4 carbon atoms, or alkylthio having from 1 to 4 carbon atoms;
R¹ is alkyl having from 1 to 3 carbon atoms; and
A is a hydrogen atom, alkanoyl having from 2 to 4 carbon atoms, or acetoacetyl.

3,943,258

CHEWING GUMS OF LONGER LASTING SWEETNESS AND FLAVOR

Bernard J. Bahoshy, Mahopac; Robert E. Klose, West Nyack, both of N.Y., and Harold A. Nordstrom, Reading, Mass., assignors to General Foods Corporation, White Plains, N.Y.

Filed Oct. 5, 1972, Ser. No. 295,313

Int. Cl.[2] A23G *3/00, 3/30*

U.S. Cl. 426—3 **6 Claims**

1. In a chewing gum composition which comprises gum base, flavor and major amount of sweet bulking agent selected from the group consisting of sugar, sugar alcohols and mixtures thereof, the improvement which comprises at least 0.3% L-aspartyl-L-phenylalanine methyl ester by weight of the total gum composition, whereby the normal sweetness and flavor is extended.

3,943,259

PREPARING FLUID SHORTENING FOR USE IN YEAST RAISED BAKERY PRODUCTS

Max E. Norris, Parma, Ohio, assignor to SCM Corporation, New York, N.Y.

Division of Ser. No. 434,128, Jan. 17, 1974, Pat. No. 3,914,452, which is a continuation-in-part of Ser. No. 361,320, May 17, 1974, abandoned. This application Mar. 6, 1975, Ser. No. 555,963

Int. Cl.[2] A23D *5/00*

U.S. Cl. 426—24 **1 Claim**

1. In a process for making yeast raised bakery products containing shortening the improvement comprising preparing a fluid shortening by:

heating a mixture of soft mono- and diglycerides, ester emulsifiers, solid stearine, and liquid vegetable oil to form a liquefied molten mixture, said mixture comprising by weight 4 to 14 parts of said soft monoand diglycerides derived from vegetable oil and having an iodine value of at least 40, 2 to 8 parts of said ester emulsifiers selected from the group consisting of ethoxylated monoglyceride, ethoxylated sorbitan, ethoxylated mannitan, ethoxylated monooleate, sodium stearoyl-1-lactylate, calcium stearoyl-2-lactylate, sodium stearoyl-2- lactylate, ethoxylated propylene glycol monoesters, ethoxylated triglycerol monostearate, and succinylated monoglyceride, 2 to 8 parts of said solid stearine, and about 40 to 100 parts of said liquid vegetable oil;

rapidly cooling said molten mixture to a temperature between about 82° to 88°F to initiate beta-crystal formation and produce a chilled blend having dispersed fat crystals;

working said chilled blend at temperatures between 82° to 88°F to develop beta-crystal formation and produce a substantially uniform dispersion containing beta-fat crystals are in equilibrium with said liquid vegetable oil; and

fluidizing said uniform dispersion by agitating at temperatures of 80° to 90°F for time sufficient to complete the beta-crystal formation and produce a stabilized fluid shortening.

3,943,260

FLAVORING AGENT

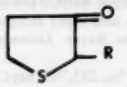
Max Winter, Geneva, Switzerland; Irving M. Goldman, Niantic, Conn.; Fritz Gautschi, Vaud, Switzerland; Ivon Flament, and Max Stoll, both of Geneva, Switzerland, assignors to Firmenich & Cie, Geneva, Switzerland

Division of Ser. No. 243,866, April 13, 1972, which is a division of Ser. No. 70,560, Sept. 8, 1970, Pat. No. 3,702,253, Continuation of Ser. No. 543,069, April 18, 1966, abandoned, which is a continuation-in-part of Ser. No. 452,342, April 30, 1965, abandoned. This application June 24, 1974, Ser. No. 482,684

Int. Cl. A23l *1/26*

U.S. Cl. 426—535 **12 Claims**

1. As a new composition of matter soluble coffee having added thereto a minor, but flavor-modifying amount of a compound selected from the group having the following general formula:



wherein R is hydrogen, methyl or ethyl.

3,943,261

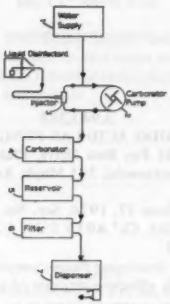
PROCESS FOR WATER DISINFECTION AND CARBONATION

Anton Amon, and Jason K. Sedam, both of Dunwoody, Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Continuation of Ser. No. 398,373, Sept. 18, 1973, abandoned. This application July 3, 1975, Ser. No. 592,959

Int. Cl.[2] A23L *2/00*

U.S. Cl. 426—67 **7 Claims**



1. A process for rapid disinfection of a water supply which is contaminated with micro-organisms and to be consumed either in the form of potable carbonated water, or as a carbonated beverage formed by admixture of said carbonated water with a beverage syrup, which comprises the steps of lowering the pH of the contaminated water to less than 6.0, but greater than 4.0, without the addition of a mineral or organic acid by the introduction of carbon dioxide gas into the contaminated water and, at substantially the same time, by injecting a sufficient amount of liquid halogen-based disinfectant into the contaminated water to achieve the complete elimination of non-cyst forming pathogenic micro-organisms and substantial reduction of non-pathogenic micro-organisms.

3,943,262

PROCESS FOR THE PRODUCTION OF A DYED EDIBLE FOOD CASING

Bruno Winkler, Weinheim-Oberflockenbach; Bernd Mangei, Waldmichelbach, and Dieter Fritz, Weinheim, all of Germany, assignors to Naturin-Werk Becker & Co., Weinheim, Germany

Filed Sept. 12, 1974, Ser. No. 505,444

Claims priority, application Germany, Mar. 11, 1974, 2411587

Int. Cl.[2] A22C *13/00*

U.S. Cl. 426—250 **12 Claims**

1. A process for the production of a dyed edible food casing comprising:

a. applying an edible dye to an edible carrier therefor in finely divided form so that the dye coats the carrier particles,

b. fixing the dye on the carrier particles by contacting the coated carrier particles with a protein from the group consisting of gelatin, collagen and casein for complex

formation whereby the dye becomes fixed on the carrier, and thereafter

c. admixing the carrier coated with the dye with an edible casing material to form an extrudable composition, and

d. extruding the resulting admixture to form the dyed casing.

3,943,263

PREPARATION OF SOY-EXTENDED FRANKFURTERS AND OTHER CURED MEAT PRODUCTS HAVING IMPROVED COLOR

Kunito Sato, Chicago, Ill., and Leonard H. Roberts, Ellisville, Mo., assignors to Armour and Company, Phoenix, Ariz.

Filed Feb. 12, 1975, Ser. No. 549,212

Int. Cl.² A23L *1/27*

U.S. Cl. 426—250 **10 Claims**

1. In a process for preparing a soy-extended cured meat product in which a soy protein material is combined with meat, the improvement comprising mixing said protein material and said meat in the presence of sodium nitrite, betanin, and canthaxanthin to thereby impart to said mixture an improved color wherein said sodium nitrite is contained in said mixture in an amount of from 10 to 200 ppm, said betanin is contained in said mixture in an amount of from 0.5 to 50 ppm, and said canthaxanthin is contained in said mixture in an amount of from 2.0 to 440 ppm, each of said percentages being based on the dry weight of the colorant and the natural weight of the meat.

3,943,264

WHEY PRODUCT

Paul F. Davis, Addison, Ill., assignor to Kraftco Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 248,966, May 1, 1972, abandoned, which is a continuation-in-part of Ser. No. 134,505, April 15, 1971, abandoned. This application Mar. 11, 1974, Ser. No. 450,205

Int. Cl.² A23C *9/00*

U.S. Cl. 426—330.2 **16 Claims**

1. A composition suitable for direct replacement of non-fat milk solids comprising whey solids, a proteinaceous material selected from the group consisting of from milk derived protein, soy flour, soy protein isolate, cottonseed meal, egg albumin, yeast and mixtures thereof, a calcium source, a phosphate source, and a stabilizing agent, said stabilizing agent being selected from phosphorus containing lipid materials and anionic surface active agents other than fatty acids and salts thereof, said stabilizing agent being present at a level of from about 0.5 to about 5 percent by weight of said composition, dry basis, said whey solids being present at a level of from about 40 percent to about 90 percent by weight of said composition, said proteinaceous material being present at a level sufficient to provide from at least 18 percent to about 50 percent by weight of total protein in said composition, said calcium source being present at a level of from about 0.2 to about 5.0 percent by weight of said composition and said phosphate source being present at a level of from about 0.2 to about 5.0 percent by weight of said composition and the ratio of calcium to phosphorus is in the range of from about 0.75:1.0 to about 1.5:1.0.

11. A method in accordance with claim 9 wherein said stabilizing agent is added to said whey product after said whey product is dried.

3,943,265

GELATIN DESSERT COMPOSITION AND PROCESS

Wayne L. Steensen, Newark, and Joseph J. Saladini, Dover, both of Del., assignors to General Foods Corporation, White Plains, N.Y.

Filed June 10, 1974, Ser. No. 478,121

Int. Cl.² A23L *1/06*

U.S. Cl. 426—576 **9 Claims**

1. A gelatin dessert composition having a short setting time on dissolving with hot water and ice which, when melted, is equal to or less than the amount of said water comprising gelatin having a Bloom of 100 to 350 grams (AOAC) and in an amount of from about 9 to about 15% by weight of said dessert composition and in an inverse relationship with the Bloom and sufficient to yield a gelatin concentration of from about 1.5 to about 3.0% in the dessert.

3,943,266

DRIED TOFU POWDER

Joseph John Halik, Ossining; Esra Pitchon, Flushing; Marvin Schulman, Monroe, all of N.Y.; Milton H. Schwarz, Westport, and Milton Yezek, Stanford, both of Conn., assignors to General Foods Corporation, White Plains, N.Y.

Filed Apr. 10, 1974, Ser. No. 459,769

Int. Cl.² A23J *1/14*

U.S. Cl. 426—656 **9 Claims**

1. Process of recovering a stable nutritious soy protein product which comprises hydrating soybeans; grinding said hydrated soybeans to form a mash and autoclaving said soy bean mash under conditions and for a period of time to extract a soy milk from the soybean mash while inactivating the lipoxydase content thereof; said soy milk being extracted from said soybean mash during said autoclaving over a period of at least five minutes; separating said extracted milk from the soybean mash; salt-precipitating the milk to yield a coprecipitate of protein-oil curd and whey; centrifuging the coprecipitate and whey to develop distinct curdbed and whey phases wherein a major depth of the bed exists as a continuous cohesive matrix; centrifugally skimming the whey phase and associated water soluble components, washing the centrifugally separated curd to an extent sufficient to remove residual whey solids, excess precipitating chemicals and polysaccahrides therefrom; subdividing the curd and forming a dispersion of curd particles; and spray drying said dispersion.

3,943,267

METHOD OF REMINERALIZING AND IMMUNIZING TOOTH ENAMEL FOR THE PREVENTION AND CONTROL OF TOOTH DECAY AND DENTAL CARIES

Neil J. Randol, Rancho Santa Fe, Calif., assignor to Neil J. Randol, Rancho Santa Fe, Calif.

Continuation-in-part of Ser. No. 471,003, May 17, 1974, abandoned. This application Jan. 14, 1975, Ser. No. 540,860

Int. Cl.² A61K *5/02*

U.S. Cl. 427—2 **27 Claims**

1. A method for remineralizing and immunizing tooth enamel to prevent and control tooth decay and dental caries, comprising the steps of:

a. etching tooth enamel with a dental etching acid to leach out the positively charged calcium ions thereof and to provide a porous, sponge-like appearing and roughened surface which is negatively charged,

b. treating said surface with a solution comprised of the positively charged ions of a heavy metal or a compatible mixture of heavy metal ions which are ionically attracted to said negatively charged surface and are deposited in and onto said porous surface which is remineralized with said heavy metal ions to form a relatively smooth surface on said tooth enamel, and

c. allowing the heavy metals in the surface of the tooth enamel to react with sulphur bearing compounds to form the corresponding heavy metal sulphide thereof which is resistant to caries producing acids and to dental decay.

14. A method for remineralizing and immunizing tooth enamel to prevent and control tooth decay and dental caries, comprising the steps of:

a. etching tooth enamel with a dental etching acid to leach out the positively charged calcium ions thereof and to provide a porous, sponge-like appearing roughened surface which is negatively charged,

b. treating said surface with a solution comprised of the positively charged ions of a heavy metal or a compatible mixture of heavy metal ions which are below hydrogen in the electromotive force series for metals, said heavy metal being ionically attracted to said negatively charged surface,

c. applying a reducing agent to said heavy metal solution to deposit said heavy metal in and onto said porous surface which is remineralized with said heavy metal to form a relatively smooth surface on said tooth enamel, and

d. allowing the heavy metals in the surface of the tooth enamel to react with sulphur bearing compounds to form the corresponding heavy metal sulphide thereof which is resistant to caries producing acids and to dental decay.

3,943,268

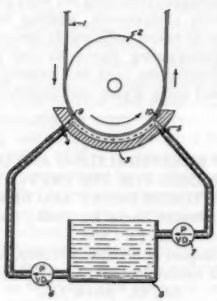
LIQUID DEVELOPMENT PROCESS AND APPARATUS FOR ELECTROSTATOGRAPHY

Masamichi Sato, Tucson, Ariz., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 807,353, March 14, 1969, abandoned. This application Mar. 29, 1973, Ser. No. 346,215

Int. Cl. G03g *13/10, 15/10*

U.S. Cl. 427—17 **6 Claims**



1. A method of forming an image comprising providing an electrostatographic imaging member bearing an electrostatic latent image on a recording surface, transporting said recording surface at a velocity of at least about 40 centimeters per second adjacent to a spaced, parallel surface of a development electrode thereby forming a development zone between said recording surface and said parallel surface of said development electrode, pumping a liquid developer into said development zone at a flow velocity substantially equal to the velocity of said recording surface so that little or no relative movement exists between said liquid developer and said recording surface to thereby avoid depletion of developer marking particle deposit on said recording surface, and sealing said liquid developer in said development zone from exposure to the ambient atmosphere to prevent volatile liquid developer components from escaping to the atmosphere.

3,943,269

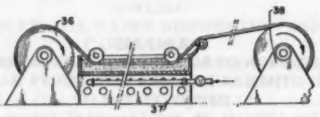
PAPER FELT AND PROCESS FOR MAKING THE SAME

David B. Bell, 6441 Cerritos St., Long Beach, Calif. 90805

Continuation of Ser. No. 334,904, Feb. 22, 1973, abandoned. This application May 24, 1974, Ser. No. 473,307

Int. Cl.² B32B *5/06, 5/22;* **B44D** *1/092*

U.S. Cl. 427—302 **8 Claims**



1. The process for producing flexible non-brittle roofing felt comprising:

first, moisture conditioning a sheet of felted vegetable fiber to render the fibers soft, flexible, non-brittle and substantially free of free water and excess moisture;

second, depositing an emulsion comprising from 10 to 100 parts water to each part of an oil with emulsifier and coupling agents added, onto said sheet and permitting the emulsion to penetrate and saturate the fibers of the sheet, said oil having a higher temperature of evaporization than water;

third, extracting free emulsion from the sheet;

fourth, subjecting the sheet to a temperature between the temperatures of vaporization of the oil and water and evaporatively removing a sufficient portion of the moisture therefrom to render fiber surfaces of the sheet structure substantially anhydrous in nature and having sufficient oil and water within the fibers of the sheet structure to render the felt structure soft and flexible;

fifth, bathing the emulsion treated sheet in hot molten bath of asphalt and permitting the asphalt to penetrate the sheet structure;

sixth, extracting the sheet from the bath and permitting excess hot molten asphalt to drain therefrom;

finally, permitting the sheet to cool and the asphalt to solidify.

3,943,270

AQUEOUS FLUX FOR HOT DIP GALVANISING PROCESS

Max Gerhard Neu, and Arthur William Murcott, both of Birmingham, England, assignors to Foseco International Limited, Birmingham, England

Filed Feb. 25, 1974, Ser. No. 445,550

Claims priority, application United Kingdom, Mar. 1, 1973, 10075/73

Int. Cl.² C23L *1/12*

U.S. Cl. 427—310 **7 Claims**

1. A galvanising flux solution which is a 3 to 30 percent by weight solution in water of a galvanising flux consisting essentially of

i. at least 25 percent by weight of zinc chloride,

ii. at least one chloride selected from the class consisting of sodium, potassium, calcium and magnesium chloride and

iii. at least one acid salt which when dissolved in water at a concentration of 1.25 percent by weight give a solution having a pH of less than 5,

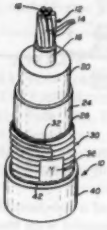
the proportions and ingredients being such that when such a flux is placed in water at a concentration of 25 percent by weight, the pH of the solution is less than 5.

3,943,271

EXTRUDED SOLID DIELECTRIC HIGH VOLTAGE CABLE RESISTANT TO ELECTRO-CHEMICAL TREES

George Bahder, Edison; George S. Eager, Jr., Upper Montclair, and David A. Silver, Livingston, all of N.J., assignors to General Cable Corporation, Greenwich, Conn.

Filed May 6, 1974, Ser. No. 467,607
Int. Cl.² H02G 15/20; H01B 7/18
U.S. Cl. 174—23 R 15 Claims



1. An electrical high voltage power cable for use underground including in combination a stranded conductor, a stress control layer forming a shield around and enclosing the conductor, a strand sealant that fills all spaces between the strands and any space between the strands and said stress control layer for preventing presence of moisture and water vapor within the stranded conductor and entrance of air and moisture through an end of the cable, and the strand sealant being semi-conducting, and an insulation system constructed so as to prevent the formation of electrochemical trees in the insulation, including an extruded solid polyethylene insulation layer tightly enclosing the stress control layer so that no moisture can enter at the ends of the cable at the interface between the insulation and the stress control layer, an extruded solid semi-conducting insulation shield tightly enclosing the insulation to prevent ingress of moisture between the insulation and the insulation shield, a metallic shield enclosing the semi-conducting insulation shield, and additional sealant comprising a semi-conducting compound between the insulation shield and the metallic shield and filling any clearances between the insulation shield and the metallic shield for preventing moisture that passes inward beyond the metallic shield from reaching the insulation shield, the sealant being chemically and physically compatible with the stress control layer and with the insulation shield and being a compound, and that maintains its physical and electrical characteristics in spite of the temperature caused by the load cycling of the power cable.

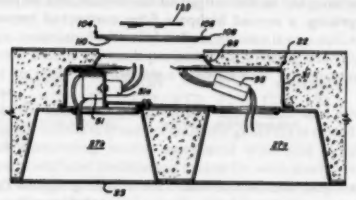
3,943,272

DUAL PRESET SERVICE FITTING OR INSERT FOR UNDERFLOOR WIREWAY SYSTEMS

James C. Carroll, Hamilton; Johnny R. Curry, Oxford; George N. Jorgensen, Oxford; Frank D. King, Oxford, and Gilbert A. McGoldrick, Hamilton, all of Ohio, assignors to Square D Company, Park Ridge, Ill.

Filed Mar. 5, 1975, Ser. No. 555,659
Int. Cl.² H02G 3/18, 3/28
U.S. Cl. 174—48 16 Claims

1. A service fitting for use with a concrete-covered cellular steel floor to provide protected access to at least one of two adjacent cells of the floor and comprising a base plate having a pair of spaced openings, means for securing the base plate to the steel floor with the openings in the base plate radially aligned with respective openings in respective top walls of adjacent cells of the floor, a box-like housing having side and top walls, interlocking means on the base plate and housing securing the housing to the base plate, an opening in the top wall of the housing, and closure means secured to the housing



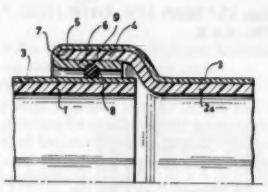
for selectively closing the opening in the top wall and providing access therethrough.

3,943,273

ELECTRICALLY CONDUCTING PLASTIC PIPE SYSTEM

Warner Jan de Putter, Hardenberg, Netherlands, assignor to Wavin B.V., Netherlands

Filed Mar. 4, 1974, Ser. No. 447,582
Claims priority, application Germany, Mar. 3, 1973, 7308162[U]
Int. Cl.² F16L 11/12; H05F 3/02; F16L 47/06
U.S. Cl. 174—84 S 4 Claims



1. A pipe connection comprising a male pipe part and a female pipe part both of thermoplastic material, each pipe part having on at least its outer surface a continuous coating of thermosetting material connected with the surface of the male and female pipe part, said coating containing a quantity of particles that are electrically conductive, said coating on each pipe part being connected with means for discharging an electric charge, and a conductive rubber sealing ring engaging the outer coating on said male pipe part and the outer coating on said female pipe part by a part of said coating extending on the inner side of said female part.

3,943,274

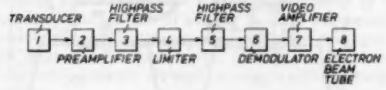
DEMODULATION SYSTEM WITH DROPOUT CORRECTION

Gerhard Dickopp; Manfred Potter, and Otto Brehm, all of Berlin, Germany, assignors to TED Bildplatten Aktiengesellschaft AEG-Telefunken-Teldec, Zug, Switzerland

Filed Apr. 2, 1973, Ser. No. 346,889
Claims priority, application Germany, Apr. 1, 1972, 2216100
Int. Cl.² H04N 5/21
U.S. Cl. 178—6.6 DC 7 Claims

1. In a demodulation system of a playback device for a carrier frequency signal, containing both useful information in the passages thereof through its zero amplitude value and signal break-ins occurring in the playback device, the system including a first highpass filter connected to receive the signal, a limiter for limiting a signal fed thereto in a manner which is

not completely symmetrical, said limiter being coupled to the output of said first filter, and a demodulator which uses the spacing between such zero passages as a criterion for demodulation coupled to the output of the limiter, the improvement comprising: a second highpass filter connected between said



limiter and said demodulator for coupling signals from said limiter to said demodulator and substantially passing only the useful information portion of the signal and suppressing the signal break-ins, said second filter having a frequency limit in the vicinity of the lowest lower sideband frequency to be transmitted through the demodulation system.

3,943,275

PRECISION TURNTABLE ROTATION IN A VACUUM ATMOSPHERE

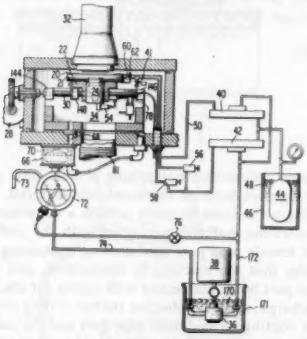
Robert Warren Jebens, Skillman, and William Henry Morewood, Pennington, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 10, 1973, Ser. No. 349,775

Claims priority, application United Kingdom, Apr. 19, 1972, 18152/72

Int. Cl.² H04N *5/76*; **G11B** *11/00, 17/00*

U.S. Cl. 178—6.6 R **13 Claims**



1. In an electron beam disc recorder, apparatus to provide precision rotation of a disc suitable for storing information thereon comprising:

a vacuum chamber;

a turntable situate within said chamber, said turntable having a disc supporting surface terminating at a substantially cylindrical rim;

bearing means for supporting said turntable in said vacuum chamber;

apparatus for supplying pressurized hydraulic fluid coupled to said bearing means for providing hydraulic fluid thereto to support said turntable;

at least one jet means coupled to said source of hydraulic fluid and located adjacent to said turntable rim for causing pressurized hydraulic fluid to impinge upon said turntable rim, to the substantial exclusion of said disc supporting surface and disc, if any, supported thereon, whereby to cause rotation of said turntable; and

control means responsive to rotational velocity of said turntable and coupled to said jet means for adjusting the flow of hydraulic fluid through said jet means to thereby control said rotational velocity.

3,943,276

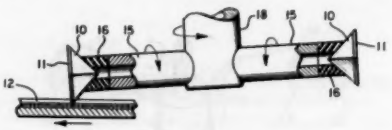
RECORD TRACKING PICKUP STRUCTURE FOR A CAPACITIVE DISC

Roger W. Knitter, Hoffman Estates, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed June 3, 1974, Ser. No. 475,737

Int. Cl.² G11B *11/06, 11/08, 3/46*

U.S. Cl. 178—6.6 R **2 Claims**



1. A pickup structure for tracking a record disc having a metallized information-storage groove to derive information stored therein comprising:

a sensing element of a substantially homogeneous material that is hard compared with the material of the disc and having a cross sectional configuration such that the element presents at least two substantially identical angular-shaped and spaced apart corner portions individually dimensioned to enter into the grooves of said disc and serve as a tracking stylus, one surface of each of said angular shaped portions having a coating of conductive material which may constitute in conjunction with said metallized groove of said disc a variable capacitor presenting a capacitance determined by the information stored in said groove; and

means for supporting said sensing element with any of said corner portions in tracking relation with said groove, said means being adjustable to change the orientation of said sensing element to bring a different one of said corner portions into tracking relation with said groove.

3,943,277

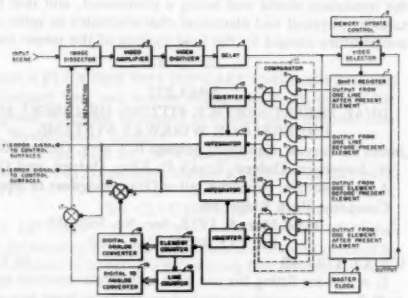
DIGITAL MEMORY AREA CORRELATION TRACKER

John W. Everly, Fort Walton Beach, Fla., and Barry S. Todd, Corona, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 20, 1969, Ser. No. 802,328

Int. Cl.² H04N *3/00*

U.S. Cl. 178—6.8 **6 Claims**



1. A digital memory, area correlation tracking device with continuous television display of the tracked area comprising:

a. a sensor,

b. a video digitizer coupled to the sensor,

c. a delay circuit connected to the video digitizer,

d. a comparator connected in circuit with the delay circuit,

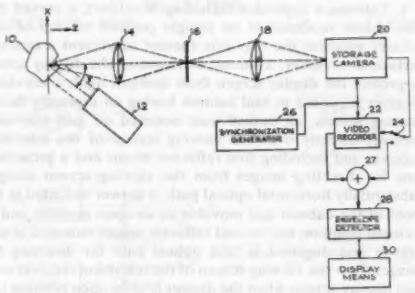
e. a video selector connected to the delay circuit,

f. a memory update control connected to the video selector,
g. a shift register coupled to the video selector and also connected in circuit with the comparator,
h. scanning means for generating a normal scan of the sensor in circuit with the sensor,
i. a master clock connected in circuit with both the shift register and the scanning means whereby the shift register and the scanning means are positively syhchronized together, and
j. integratinig means for modifying the normal scan of the sensor in response to the output of the comparator, connected between the comparator and the sensor.

3,943,278
SURFACE DEFORMATION GAUGING SYSTEM BY MOIRE INTERFEROMETRY

Stevens David Ramsey, Jr., Palo Alto, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Filed Aug. 22, 1974, Ser. No. 499,486
Int. Cl.² H04N *7/02, 7/18*
U.S. Cl. 178—6.8 **7 Claims**



1. In a system for comparing interference patterns of two objects by comparing the interference pattern signals representative of a first object derived from a television camera used for viewing said object, with the interference pattern signals representative of a second object derived from said television camera when viewing said second object the improvement comprising

means for projecting a grating image on said second object,
objective lens means for focusing an image of a second object on a plane in space, said objective lens means having a predetermined magnification for establishing a first spatial frequency which exceeds the resolution of said television camera, and
a transmission grating means positioned in said plane in space to receive said image, said transmission grating means establishing a second spatial frequency which exceeds the resolution of said television camera.

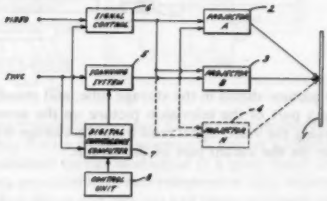
3,943,279
DIGITAL CONVERGENCE OF MULTIPLE IMAGE PROJECTORS

Harald M. Austefjord, San Jose, Calif., assignor to Aeronutronic Ford Corporation, Blue Bell, Pa.

Filed Sept. 23, 1974, Ser. No. 508,279
Int. Cl.² H04N *5/74, 9/28, 9/58*
U.S. Cl. 178—7.3 D **3 Claims**

1. In an image display device, said device comprising:

at least first and second separately scanned image projectors for projecting an image on a common area of a viewing screen; each of said image projectors including an image generating beam,
first deflecting means for deflecting said beam along a line,
second deflecting means for deflecting said beam in a direction generally perpendicular to said line to form a raster,
means for intensity modulating said beam to produce an image,
means associated with said deflecting means and said modulating means for each projector for causing each projector to display a luminous grid on said common screen area,
means for controlling the number of lines on said grid,
means for selectively suppressing the generation ofsaid grid,
cursor generating means associated with said deflecting means and said modulating means for selectively presenting on said common screen area an indication representative of a selected region only of said raster,
control means associated with said first deflecting means and said second deflecting means of at least one of said



projectors for causing said displayed luminous grids to coincide on said common screen area,
a digital memory,
means associated with said control means and said cursor generating means for storing in said memory digital representations of the correction required to obtain coincidence of said grids for the selected region identified by said cursor generating means,
means for selectively altering the selected region identified by said cursor generating means,
means for reading said memory in synchronism with the scannning of said projectors,
means for converting the digital information in said memory into an analog signal, and
means for altering the deflections produced by said first and second deflecting means of at least one of said projectors in response to said analog signals.

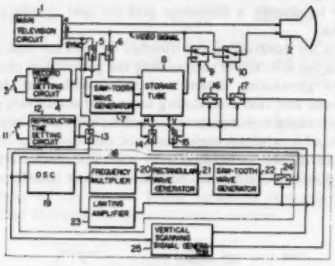
3,943,280
TELEVISION RECEIVER WITH ZOOM STORAGE TUBE FRAME GRABBER WITH ELECTRONIC INSET INTO CONTINUING RECEIVED VIDEO STREAM

Takeji Kimura; Iwajiro Sembokuya, both of Hirakata; Hideo Hozumi, and Tomio Oyama, both of Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Company, Ltd., Osaka, Japan

Filed Jan. 9, 1973, Ser. No. 322,214
Claims priority, application Japan, Jan. 14, 1972, 47-6329; Jan. 14, 1972, 47-6330
Int. Cl.² H04N *5/48*
U.S. Cl. 178—7.5 R **5 Claims**

1. A television receiver comprising means for receiving a television signal; a picture tube for displaying the received television signal as the corresponding television picture on the screen of said picture tube; means for extracting a part of a video signal for a single frame from the received television signal at any desired moment; a storage tube having a target for storing the extracted video signal; means for repeatedly reading the stored video signal out of the storage tube by applying horizontal and vertical sawtooth deflection signals to said storage tube whose periods are not equal to the respective horizontal and vertical sync repetition rates of the received

television signal, amplitude controlling means for controlling the amplitude of the sawtooth generated by said means for repeatedly reading, and level controlling means for controlling the DC level of said sawtooth thereby effecting the zooming



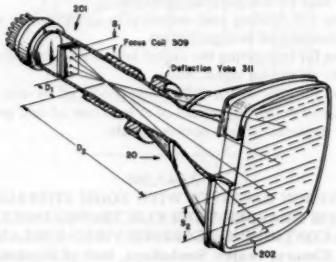
of the picture stored in the storage tube; and means for eliminating a part of the television picture on the screen and for displaying the video signal read from the storage tube as a still picture on the vacant part of the screen.

3,943,281

MULTIPLE BEAM CRT FOR GENERATING A MULTIPLE RASTER DISPLAY

Bruce W. Keller, and Michael N. Ernstoff, both of Los Angeles, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 8, 1974, Ser. No. 412,365
Int. Cl.² H04N 3/28
U.S. Cl. 178—7.5 D **10 Claims**



10. A system for providing a broadband television type display having a selected number of sweep lines for displaying a single image, comprising:

a cathode ray tube having an information retentive screen for writing a frame of data thereon having a single electron gun providing N electron beams, said electron gun being positioned relative to said screen so that N beams define N equal raster areas raster with each raster at a different one of N positions on said screen and so that each of said N rasters may be formed on a line-by-line basis to define a separate raster area, said N equal raster areas define said image;

scanning means coupled to said cathode ray tube for simultaneously scanning said N beams across said screen in a first dimension for developing said N rasters; and

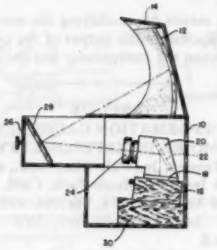
deflecting means coupled to said cathode ray tube for simultaneously deflecting said N beams in a second dimension for developing said N rasters.

3,943,282

PROJECTION TELEVISION APPARATUS

Earl W. Muntz, 16134 Covello St., Van Nuys, Calif. 91406

Filed Jan. 13, 1975, Ser. No. 540,312
Int. Cl.² H04N 5/74
U.S. Cl. 178—7.91 **2 Claims**



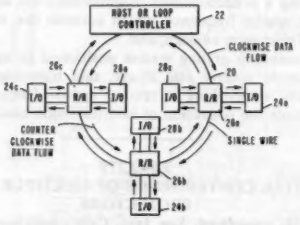
1. Television apparatus including: a cabinet; a curved display screen mounted in an upright position on top of said cabinet adjacent the rear side thereof to present a concave surface to a viewer; a shroud surrounding the display screen to protect the display screen from ambient light; a television receiver mounted in said cabinet having an upwardly facing viewing screen; an optical unit mounted on said television receiver directly over the viewing screen of the television receiver and including first reflector means and a projection lens for directing images from the viewing screen along a substantially horizontal optical path; a drawer mounted in the front of the cabinet and movable to an open position and to a closed position; and second reflector means mounted in said drawer and disposed in said optical path for directing the images from the viewing screen of the television receiver onto said display screen when the drawer is in its open position and with a size corresponding to the size of said display screen.

3,943,283

BIDIRECTIONAL SINGLE WIRE DATA TRANSMISSION AND WRAP CONTROL

Edward S. Caragliano, and Howard H. Nick, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 17, 1974, Ser. No. 479,935
Int. Cl.² H04L 5/14
U.S. Cl. 178—58 R **9 Claims**



1. In a data communications system having a host unit and a plurality of terminals connected to a single transmission wire;

means at said host unit for placing data on the transmission wire traveling in opposite directions;

a plurality of repeater means each interfacing a pair of said terminals with said transmission wire for receiving and regenerating data from either direction, distributing said

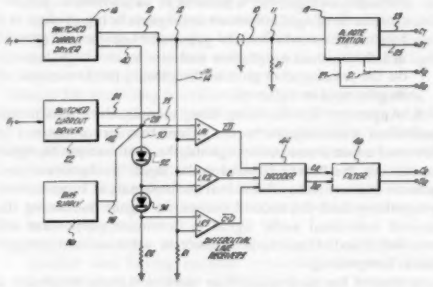
data to at least one of said pair of terminals and coupling data from said terminals to said transmission wire;

said repeater means including a first directional coupler for coupling data signals from the repeater means to said transmission wire in the one direction without interfering with the data traveling on the wire in the opposite direction and a second directional coupler for coupling data signals from the repeater means to said transmission wire in the other direction without interfering with data signals traveling on the wire in the opposite direction whereby the data signals can be conveyed via the same communication wire in opposite directions simultaneously, thereby doubling the data handling capacity of the communications system.

3,943,284
DIGITAL DATA COMMUNICATION SYSTEM FEATURING MULTI LEVEL ASYNCHRONOUS DUPLEX OPERATION

Robert D. Nelson, Covina, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 18, 1975, Ser. No. 550,538
Int. Cl.² H04L 5/14
U.S. Cl. 178—58 R **13 Claims**



13. A method providing for the simultaneous bidirectional transmission of a plurality of asynchronous individual digital data signals using a single transmission line, said method comprising the steps of:

converting a first plurality of individual data signals into a first multi-level signal and applying said first multi-level signal to one end of said transmission line;

converting a second plurality of individual data signals into a second multi-level signal and applying said second multi-level signal to the other end of said transmission line;

decoding a received multi-level signal at each end of said transmission line by steps including detecting the levels of the received multi-level signal with reference to predetermined bias-controllable threshold values chosen so as to produce resulting digital signals representative of the corresponding plurality of individual digital data signals transmitted from the other end of the transmission line;

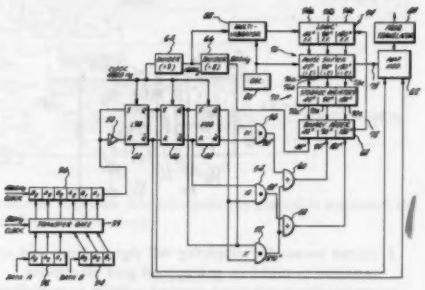
dynamically varying the biasing of said predetermined threshold values at each end of the transmission line in accordance with the instantaneous value of a multi-level signal being simultaneously transmitted from that end so that the thresholds at each end appear substantially constant to a received multi-level even during simultaneous transmission and reception of a multi-level signal at each end; and

filtering the resulting decoded digital signals by removing therefrom spurious pulses having a significantly shorter duration than that of the resulting decoded digital signals.

3,943,285
MULTIPLEXED DATA MODEM

Robert Gordon Ragsdale, Hollywood, and Henry Howard Parrish, Hialeah, both of Fla., assignors to Milgo Electronic Corporation, Miami, Fla.

Filed May 10, 1973, Ser. No. 359,186
Int. Cl.² H04L 27/24
U.S. Cl. 178—67 **23 Claims**



1. A data transmission system having a transmitter for transmitting data over a single transmission link as a differentially phase modulated carrier modulated at a given baud rate with digital data provided from two independent data sources each emitting data bits at one and one half times said baud rate, and a receiver for demodulating the differentially phase modulated signal received over said link, the improvement which comprises:

means at said transmitter operative at said given baud rate for differentially phase modulating successive three bit groups with bits in each group received from both of said independent data sources;

means at said transmitter connected to said modulating means and operative once for every other three bit group for modifying by a predetermined phase angle the differentially modulated phase angle associated with successive three bit groups, which modifying angle is capable of being detected at the receiver to properly segregate each three bit group from an otherwise randomly appearing stream of data bits represented in the received line signal;

means at said receiver for compensating, once each alternate baud time, the differentially phased signal received over said link with a predetermined modifying angle of the same amount as used at the transmitter; and

means at said receiver responsive to the appearance of said predetermined modifying angle during demodulation for segregating said three bit groups into the form originally emitted by the two data sources at said transmitter.

3,943,286
VARIABLE GAIN CONTROL CIRCUIT

Katsuaki Tsurushima, Kawasaki, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 28, 1974, Ser. No. 455,786
Claims priority, application Japan, Mar. 29, 1973, 48-36422
Int. Cl.² H04R 5/00; H03G 3/30
U.S. Cl. 179—1 GQ **3 Claims**

1. A variable gain control circuit comprising:

a. a signal transmitting path having signal input and signal output terminals;

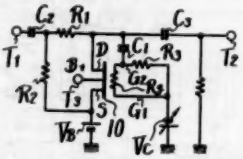
b. a first impedance means connected between said signal input and signal output terminals;

c. a Silicon Resisted Gate type MOS field effect transistor having a conductive channel provided between its source and drain regions provided on a substrate, a silicon dioxide layer provided on said conductive channel, a resistive layer provided on said silicon dioxide layer with a con-

stant thickness, first, second and third gate electrodes provided respectively on both ends of said resistive layer and said substrate; a second impedance means;

d. circuit means for connecting said drain electrode to said output terminal; said source electrode connected to said input terminal through said second impedance means;

e. means for supplying to said third gate electrode a reverse biasing voltage with respect to said source and drain regions;



f. circuit means for supplying AC signals from said output terminal to said first and second gate electrodes;

g. means for supplying a control voltage to said first and second gate electrodes for controlling the impedance of said conductive channel;

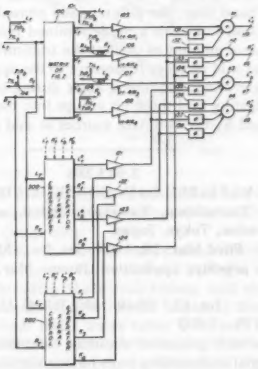
whereby input signals applied to said signal input terminal are linearly controlled.

3,943,287

APPARATUS AND METHOD FOR DECODING FOUR CHANNEL SOUND

Daniel W. Gravereaux, Wilton, and Gerald A. Budelman, Bridgeport, both of Conn., assignors to CBS Inc., New York, N.Y.

Filed June 3, 1974, Ser. No. 475,434
Int. Cl.² H04H *5/00*
U.S. Cl. 179—1 GQ **10 Claims**



1. Apparatus for decoding first, second, third and fourth individual audio signals to the extent they are contained in first and second composite signals, the first composite signal containing the first individual audio signal in dominant proportion and two other individual audio signals in subdominant proportions and the second composite signal containing the second individual audio signal in dominant proportion and two other individual audio signals in subdominant proportions, comprising:

a. means for measuring the degree of directional predominance of each of said four individual audio signals;

b. first, second, third and fourth output terminals;

c. means responsive to said first and second composite signals for forming first, second, third and fourth partially decodedd signals, each of said partially decoded signals including a different one of the individual audio signals in dominant proportion and two other individual audio signals in subdominant proportion;

d. means for applying said first, second, third and fourth partially decoded signals to said first, second, third and fourth output terminals, respectively, each being applied at a level which depends on the degree of directional predominance of its principal component;

e. means responsive to said first and second composite signals for forming first, second, third and fourth enhancement signals, each of said enhancement signals having a different one of said individual audio signals as its principal component; and

f. means for applying each of said enhancement signals to the particular ones of said output terminals at which its principal component is present in subdominant proportion, each of said enhancement signals being applied at a relative phase which is the opposite of said signal present in subdominant proportion and at a level which depends on the measured degree of directional predominance of its principal component.

8. Apparatus for decoding first, second, third and fourth individual audio signals to the extent they are contained in first and second composite signals, the first composite signal containing the first individual audio signal in dominant proportion and two other individual audio signals in subdominant proportions and the second composite signal containing the second individual audio signal in dominant proportion and two other individual audio signals in subdominant proportions, comprising:

a. means for generating four control signals which are a measure of the degree of directional predominance of the four individual audio signals, respectively;

b. first, second, third and fourth output terminals;

c. means for generating eight combination control signals by forming weighted differences between said four control signals;

d. means responsive to said first and second composite signals for forming first, second, third and fourth partially decoded signals, each of said partially decoded signals including a different one of the individual audio signals in dominant proportion and two other individual audio signals in subdominant proportion;

e. means for applying said first, second, third and fourth partially decoded signals to the first, second, third and fourth output terminals, respectively;

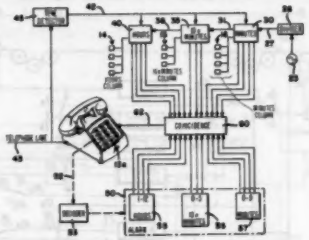
f. means responsive to said first and second composite signals for forming eight enhancement signals, two each of said enhancement signals having a different one of said individual audio signals as its principal component; and

g. means for applying each of said enhancement signals to the particular ones of said output terminals at which its principal component is present in subdominant proportion, each of said enhancement signals being applied at a relative phase which is the opposite of said signal present in subdominant proportion and at a level which depends on the measured degree of directional predominance of its principal component; said means including eight gain control amplifiers responsive to said eight enhancement signals, the gain of each gain control amplifier being controlled by a different one of said combination control signals.

3,943,288
TELEPHONE INCORPORATING BINARY CODED DECIMAL TIME DISPLAY

Fredric L. Reed, Beaver Falls, Pa., and Edgar D. Young, Hilliard, Ohio, assignors to Edgar D. Young, Columbus, Ohio

Filed Oct. 23, 1973, Ser. No. 408,632
Int. Cl.² G04C 17/02
U.S. Cl. 179—2 TC **9 Claims**



7. An electronic clock for displaying time in binary coded decimal form including

time display means including three vertical columns arranged in side by side relation, the left column including four controllable light means for displaying hours in binary form, a center column including three controllable light means for displaying tens of minutes in binary form, the right vertical column including four controllable light means for displaying minutes in binary form,

means for providing a frequency stable source of pulses,

a minutes counter responsive to said frequency stable source means and having outputs connected to individual light means in the right vertical column, and means for resetting said minutes counter to zero upon the occurrence of the next pulse from the frequency stable source means after the binary number representing nine has been displayed,

a tens of minutes counter responsive to said minutes counter and having outputs connected into individual light means in the center column, and means for resetting said tens of minutes counter to zero. upon the occurrence of the next pulse from said minutes counter after the binary number representing five has been displayed and,

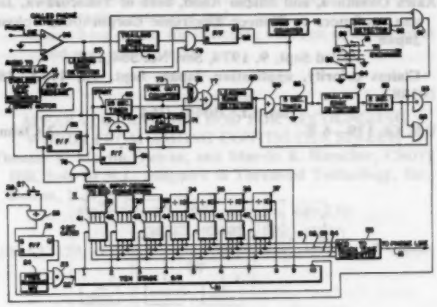
an hours counter responsive to said tens of minutes counter and having outputs connected into individual light means in the left column, and means for resetting said hours counter to one upon the occurrence of the next pulse from said tens of minutes counter after the binary number representing twelve has been displayed.

3,943,289
AUTOMATIC TELEPHONE CALLER

Norman A. Sheldon, Denver, and Erwin L. Dosch, Lakewood, both of Colo., assignors to Environmental Developers, Inc., Denver, Colo.

Filed July 12, 1974, Ser. No. 488,071
Int. Cl.² H04M 1/44
U.S. Cl. 179—6 D **12 Claims**

1. Apparatus for automatically supplying a pre-recorded message to a plurality of telephone subscriber stations in sequence comprising means for placing a telephone call to a telephone number, means for coupling the message to a telephone line in response to the called number being reached, counter means for storing the number to be called, means for incrementing the counter means by the same predetermined number to change the telephone number by a predetermined number to derive another number, and means responsive to the call being either completed or an indication of the called number being incapable of being reached for again activating the means for placing a call to the another telephone number; the means for placing, means for coupling, means for incrementing and means for again activating being repeatedly

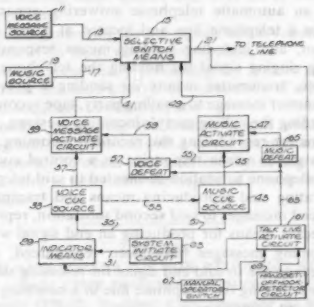


activated so that calls are automatically placed in sequence to a plurality of subscribers.

3,943,290
SEMI-AUTOMATIC TELEPHONE-ANSWERING SYSTEM

Michael E. Golden, 14028 W. Tahiti Way, P43, Marina del Ray, Calif. 90291

Filed Jan. 9, 1974, Ser. No. 432,106
Int. Cl.² H04M 1/64
U.S. Cl. 179—6 C **11 Claims**



1. A semi-automatic telephone answering system comprising:

a source of pre-recorded voice messages each preceeded by a pre-recorded cue signal;

a source of pre-recorded entertainment;

selective switch means coupled between a telephone line and said source of pre-recorded voice messages and entertainment;

operator activated answering system initiate means for manually setting said system in operation, said system thereafter operating automatically;

voice cue signal generating means connected to said system initiate means for generating a voice cue signal responsive to said pre-recorded cue signal;

voice message activate means connected to said voice cue generating means to receive said voice cue signal; and

means connecting said voice message activate means to said selective switch means, said selective switch means automatically connecting said voice message source to said line only in response to said voice cue signal whereby a pre-recorded voice message appears on said line only at the beginning of said message.

3,943,291

AUTOMATIC TELEPHONE ANSWERING APPARATUS

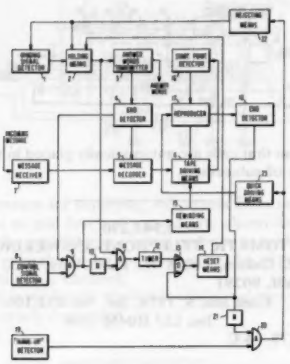
Akira Okamura, and Shizuo Ando, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sept. 9, 1974, Ser. No. 504,219

Claims priority, application Japan, Sept. 10, 1973, 48-101883

Int. Cl.² H04M 1/64

U.S. Cl. 179—6 E **2 Claims**



1. In an automatic telephone answering apparatus connected to a telephone line and located at a first telephone substation, and including holding means responsive to an incoming ringing signal for holding the telephone line in a busy state, transmitter means for sending a previously recorded answer message to a calling party, tape recorder means for recording the calling party's incoming message, reproducing means for reproducing the recorded incoming messages, remote control means responsive to a control code from a second telephone substation connected to said telephone line for operating said reproducing means and transmitting the reproduced messages to said second substation, reproduction-end detector means for producing an end signal when all of the incoming messages have been reproduced, and reset means responsive to said end signal for releasing said holding means and placing the telephone line in a non-busy state, the improvement comprising:

a. hang-up detector means for detecting a disconnection of said second substation from the telephone line during the operation of said reproducing means and for producing a disconnect signal indicative of said disconnection;

b. ringing signal rejection means responsive to said disconnect signal and for blocking receipt of any further incoming ringing signals; and

c. fast drive means responsive to said disconnect signal for driving said tape recording means in a fast-forward mode until said reproduction-end detector means produces said end signal to produce said non-busy state.

3,943,292

AUTOMATIC TELEPHONE ANSWERING APPARATUS

Makoto Takazawa, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sept. 9, 1974, Ser. No. 504,563

Claims priority, application Japan, Sept. 22, 1973, 48-107233

Int. Cl.² H04M 1/64

U.S. Cl. 179—6 R **12 Claims**

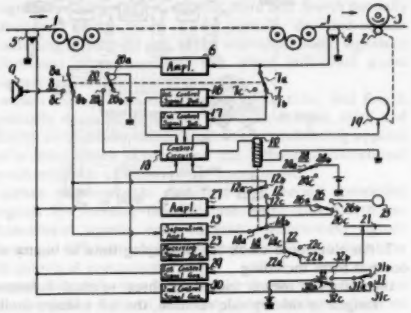
1. A magnetic recording and/or reproducing apparatus for an automatic telephone answering device comprising:

a. a single track magnetic tape with instruction programs recorded thereon within a first predetermined distance portion of said tape;

b. means for driving said magnetic tape;

c. first and second magnetic heads mounted adjacent said single track magnetic tape and spaced a predetermined distance apart;

d. switching means for changing signal transmission paths between said first and second magnetic heads; and



e. means for controlling said magnetic tape driving means and said changing means, whereby said first magnetic head reproduces said instruction programs and supplies the reproduced instruction program signal to a telephone circuit and also to said second magnetic head to be recorded on said single track magnetic tape within a part of a second predetermined distance portion of said tape, and an incoming message signal from said telephone circuit recorded by said second magnetic head on said single track magnetic tape on a portion thereof.

3,943,293

STEREO SOUND REPRODUCING APPARATUS WITH NOISE REDUCTION

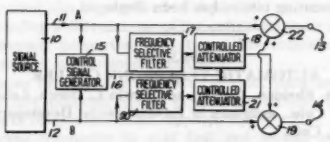
Arthur Raymond Bailey, Bingley, England, assignor to Ferrograph Company Limited, England

Filed Nov. 5, 1973, Ser. No. 412,896

Claims priority, application United Kingdom, Nov. 8, 1972, 51395/72

Int. Cl.² H04H 5/00

U.S. Cl. 179—15 BT **16 Claims**



1. Stereo audio apparatus having input means providing at least two audio frequency input signals and at least two audio frequency signal output terminals to which are fed audio output signals derived from the input signals wherein there are provided controllable means including at least one frequency selective filter and adjustable signal level controller operably responsive to an applied control signal arranged for introducing cross talk at the higher end of the audio frequency band between output signals to the output terminals, control means including a high pass filter and rectifier arranged to receive at least one of the input and/or output signals to provide a control signal dependent on the amplitude of the high frequency component of said one of the input and/or output signals and means applying said control signal to said adjustable signal

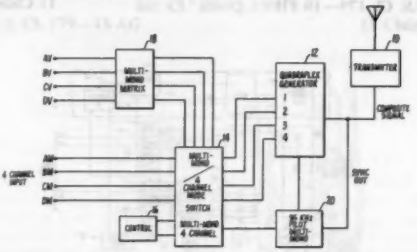
level controller to increase the cross talk as the signal level decreases.

3,943,294

MULTI-MONO FM SYSTEM

Louis Dorren, San Mateo, Calif., assignor to Quadracast Systems, Inc., San Mateo, Calif.

Filed June 21, 1974, Ser. No. 481,787
Int. Cl.[2] H04H 5/00; H04J 1/00
U.S. Cl. 179—15 BT 4 Claims



1. In a four channel broadcasting system, means for providing a dual mode of operation, namely, a first mode comprising four interrelated, compatible audio elements designated AM, BM, CM and DM, and a second mode comprising four unrelated, incompatible audio elements designated AV, BV, CV and DV, both modes providing a compatible four channel composite signal for use in conjunction with an FM radio transmitter having either of said modes modulated thereon comprising:

a. a main channel,

b. a synchronizing pilot signal of a first predetermined frequency removed from said main channel,

c. a first subchannel centered at a first subcarrier frequency at the second harmonic of said pilot signal and a second subchannel centered at a second subcarrier frequency at the fourth harmonic of said pilot signal,

d. means for providing a first mode of operation wherein signals AM, BM, CM and DM are present,

e. means for modulating a composite of all four of said signals on said main channel, modulating the signal AM + BM − CM − DM on the sine of said first subcarrier frequency and modulating the signal AM − BM − CM + DM in quadrature therewith on the cosine of the first subcarrier and modulating the signal AM − BM + CM − DM on said second subcarrier to provide a signal of the first mode, said means including a quadraplex generator having four inputs,

f. means for providing a second mode of operation wherein signals AV, BV, CV and DV are present,

g. means for modulating said AV signal on said main channel, modulating said BV signal on said first subcarrier frequency, modulating said CV signal in quadrature with said BV signal on the first subcarrier and modulating said DV signal on said second subcarrier to provide a signal of the second mode,

h. means for switching from said first mode to said second mode, said means including a pilot switching signal and

i. said means of paragraphs (e) and (g) including a transmitter having first audio input means for the elements AV, BV, CV and DV, said transmitter having:

i. a multi-mono matrix connected to said first audio input means,

ii. second audio input means for the signals AM, BM, CM and DM,

iii. a multi-mono mode switch having four outputs including a first position wherein said four outputs are connected to said multi-mono matrix, and a second position wherein said four outputs are connected to the second audio input means,

iv. said outputs being connected to the four inputs of said quadraplex generator and,

v. switching means for switching between said first input and said second input

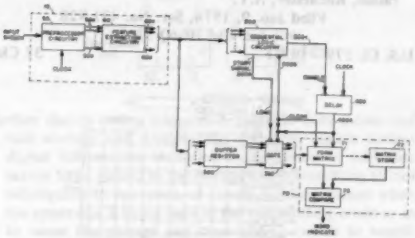
---

3,943,295

APPARATUS AND METHOD FOR RECOGNIZING WORDS FROM AMONG CONTINUOUS SPEECH

Thomas B. Martin, Delran, and Marvin B. Herscher, Cherry Hill, both of N.J., assignors to Threshold Technology, Inc., Delran, N.J.

Filed July 17, 1974, Ser. No. 489,231
Int. Cl.[2] G10L 1/00
U.S. Cl. 179—1 SA 7 Claims



1. Apparatus for recognizing the occurrence of a command word from among input speech that may be of continuous form, comprising:

a. means for generating feature signals which depend on the features of an input word being spoken;

b. means for sequentially processing the feature signals to determine the time interval of occurrence of a predetermined sequence of features; and

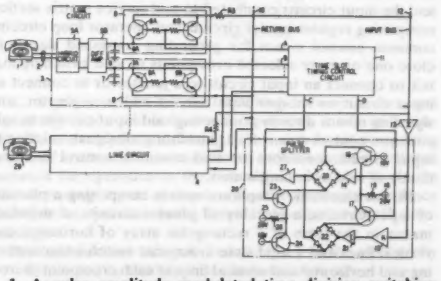
c. means for comparing the feature signals which occur during said time interval with a stored set of features that are expected to occur characteristically during the command word to determine the degree of correlation therebetween.

3,943,296

METHOD AND APPARATUS FOR REDUCING NOISE IN PAM TIME DIVISION NETWORKS

John Francis O'Neill, Boulder, Colo., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Aug. 2, 1974, Ser. No. 494,083
Int. Cl.[2] H04J 3/10
U.S. Cl. 179—15 AN 11 Claims



1. A pulse amplitude modulated time division switching system comprising a plurality of sources of low frequency information, a sampling bus, means for applying pulses modulated by said information sources to said bus in a repetitive

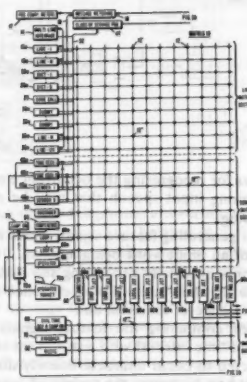
multiplexed sequence, said applying means including means for generating for each information modulated pulse a pair of pulses, each pulse of said pulse pair having an equal average value but being opposite in polarity, a plurality of outputs, means for repetitively connecting said outputs to said sampling bus so that each of said outputs receives pulses from one of said information sources, said connecting means including means for connecting said outputs to receive the first pulse of said pulse pair, but to block the second pulse of said pulse pair, and means for integrating the received pulses to recover said low frequency information.

3,943,297

ELECTRONIC PRIVATE AUTOMATIC BRANCH EXCHANGE

Uwe A. Pommerening, Webster, and Glenn L. Richards, Caledonia, both of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Jan. 9, 1974, Ser. No. 431,928
Int. Cl.² H04Q 3/52
U.S. Cl. 179—18 GF 37 Claims



9. An electronic telephone system comprising a plurality of input circuits, a plurality of junctor circuits, a switching matrix in the form of a rectangular array of horizontal and vertical lines and switch means for selectively effecting interconnection between a horizontal line and a vertical line at the crosspoint thereof in response to receipt of a command signal, said input circuits being connected to respective horizontal lines and said junctor circuits being connected to respective vertical lines, said switching matrix comprising a line matrix section and service matrix section, the input circuits connected to said line matrix section comprising subscriber line circuits and the input circuits connected to said service matrix section comprising register sender circuits and operator loop circuits, common control means for generating command signals to close one or more selected crosspoints of said switching matrix to connect an input circuit to a junctor or to connect an input circuit to another input circuit and to a junctor, and signaling means directly connecting said input circuits to said common control means for transmitting all signals relating to input circuit conditions to said common control independently of said switching matrix.

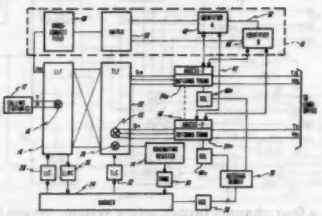
28. An electronic telephone system comprising a plurality of input circuits, a plurality of junctor circuits, a switching matrix in the form of a rectangular array of horizontal and vertical lines and a solid state crosspoint switch interconnecting said horizontal and vertical lines at each crosspoint thereof in response to receipt of both an address signal and a command signal, said input circuits being connected to respective horizontal lines and said junctor circuits being connected to respective vertical lines, and common control means for generating address signals and command signals to close one or more selected crosspoint switches to connect an input circuit to a junctor or to connect an input circuit to another input circuit and to a junctor.

3,943,298

AUTOMATIC NUMBER IDENTIFICATION

Robert J. Clark, Fairport; Gordon H. Davis, Canandaigua, and Amin Y. Zaky, Rochester, all of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed June 26, 1974, Ser. No. 483,477
Int. Cl.² H04Q 3/72
U.S. Cl. 179—18 FH 11 Claims



1. Improved automatic number identification apparatus in a telephone system of the type having:
- a central office;
- a plurality of subscriber lines connected to said central office, each of said subscriber lines having
- a sleeve lead associated therewith in said central office;
- at least two outgoing trunk circuits in said central office;
- means in said central office for connecting the sleeve lead associated with one of said plurality of subscriber lines initiating a call to one of said outgoing trunk circuits, said connecting means functioning further for connecting said sleeve lead associated with another of said plurality of subscriber lines initiating a call to another of said outgoing trunk circuits;
- a plurality of number elements, at least one of said plurality of number elements each associated with one of said plurality of subscriber lines and connected to said sleeve lead associated therewith; and
- a plurality of directory number digit buses, said plurality of number elements each so connected through isolation means to said digit buses that a signal issuing from any one of said number elements appears simultaneously on preselected ones of said digit buses to form indicia thereon representative of a unique directory number associated with said any one number element;

wherein the improvement comprises:
- an identifier unit having said plurality of directory number digit buses connected thereto;
- another identifier unit having said plurality of directory number digit buses connected thereto;
- means for connecting the sleeve lead associated with one said subscriber line initiating a call from said one outgoing trunk circuit to said identifier unit; and
- means for connecting the sleeve lead associated with said other subscriber line initiating a call from said other outgoing trunk circuit to said other identifier unit;

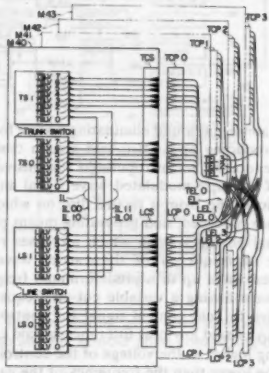
each of said identifier units including:
- a control means,
- means responsive to said control means during an identification time period for generating an identification signal for application to said sleeve lead connected thereto,
- means responsive to said control means during said identification time period for disabling said generating means of the alternate identifier unit, and

means responsive to said control means during said identification time period for storing said indicia appearing on said number element buses in response to said identification signal applied.

3,943,299
LINK NETWORK

Hiromi Moriyama, Fujisawa; Motosuke Kuwabara, Yokohama; Tadao Tsuruda, Yokohama, and Tatuo Hamada, Yokohama, all of Japan, assignors to Hitachi, Ltd., Japan

Filed July 22, 1974, Ser. No. 490,269
Claims priority, application Japan, July 25, 1973, 48-83136
Int. Cl.² H04Q *3/06*
U.S. Cl. 179—18 AG 11 Claims



1. A link network comprising

a. a plurality of sublink networks having the same structure each of which includes a plurality of lattice switches arranged in at least two stages, each lattice switch having a plurality of link terminals, and internal links connecting a part of the link terminals of the lattice switches in one of the stages with a part of the link terminals of the lattice switches in an adjacent stage of the same one of said plurality of sublink networks; and

b. an external link cable connecting those link terminals of the lattice switches in the one stage which are not connected with the internal links with those link terminals of the lattice switches in adjacent stages of each other sublink network of said plurality of sublink networks which are not connected with the internal links.

3,943,300
TELEPHONE USERS APPARATUS

Robert Andrew Stevenson, Newton Aycliffe, England, assignor to The General Electric Company Limited, London, England

Filed May 23, 1974, Ser. No. 472,705
Claims priority, application United Kingdom, May 23, 1973, 24528/73
Int. Cl.² H04M *1/45*
U.S. Cl. 179—90 B 8 Claims

1. Telephone user's apparatus comprising

a plurality of manually-operable calling means,

a main data store for the storage of a plurality of data words, each of which comprises digital information in respect of another party to whom telephonic connection may be required,

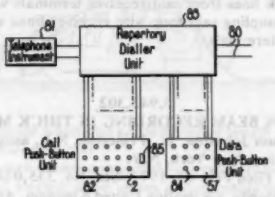
mode selection means operable to enable the apparatus to be used in either a recording or transmitting mode,

a plurality of manually-operable data means,

circuit means operable subsequent to selection of the recording mode by the mode selection means to write into the main data store a new data word comprising digital information identified by operation of said data means,

a storage and transmitting circuit to supply electric signals for transmission to line characterising digital information temporarily stored thereby,

circuit means interconnecting said main data store, said manually-operable calling means and said storage and transmitting circuit to cause the storage and transmitting circuit temporarily to store information read from the main data store in respect of a party identified by operation of the appropriate calling means when the transmitting mode is selected by the mode selection means, and

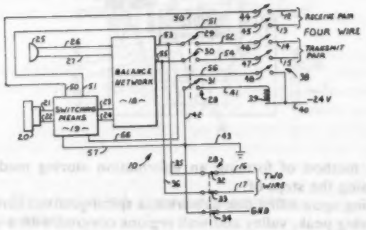


further circuit means interconnecting said data means and said storage and transmitting circuit to enable further digital information identified by operation of said data means to be passed to the storage and transmitting circuit subsequent to operation of selected calling means when the apparatus is being used in the transmitting mode so as to cause the storage and transmitting circuit to supply electric signals for transmission to line characterising the further information after supplying electric signals characterising the digital information read from the main data store in respect of the party identified by operation of the appropriate calling means.

3,943,301
SOLID STATE FOUR-WIRE SWITCH FOR KEY TELEPHONES

John W. Ervin, P.O. Box 123, Kearney, Mo. 64060

Filed Oct. 7, 1974, Ser. No. 512,437
Int. Cl.² H04M *1/00*
U.S. Cl. 179—99 8 Claims



1. A solid state switch for switching between a two-wire operating mode and a four-wire operating mode in a telephone, said telephone including a two-wire circuit comprising a pair of conductor lines connected with a telephone balance network for operation in the two-wire mode and a four-wire circuit having a pair of receiver lines bypassing the balance network for operation in the four-wire mode, the switch comprising:

first and second network lines adapted to be electrically connected to the telephone balance network;

first and second receiver terminals adapted to be electrically connected to a telephone receiver;

solid state switching means for electrically connecting said first network line to said first receiver terminal and said

second network line to said second receiver terminal in the two-wire mode, said switching means having means for electrically coupling said first and second receiver terminals with the respective four-wire receiver lines, said switching means comprising a pair of transistors each having base, emitter, and collector electrodes, said base electrodes resistively coupled to ground, said emitter electrodes connected to the respective network lines, and said collector electrodes connected to the respective receiver terminals; and

reverse biasing means for turning off said switching means in a four-wire mode to thereby electrically isolate said network lines from said receiver terminals while electrically coupling said four-wire receiver lines with said receiver terminals.

3,943,302

ELECTRON BEAM RECORDING IN THICK MATERIALS

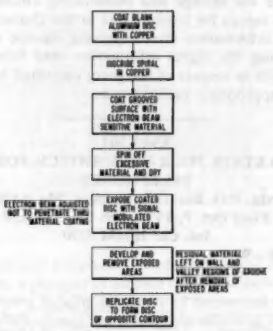
Loren Bainum Johnston, Jr., Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 23, 1973, Ser. No. 335,024

Claims priority, application United Kingdom, Apr. 19, 1972, 18040/72

Int. Cl.² G11B *11/12*

U.S. Cl. 179—100.4 C **13 Claims**


COAT BLANK ALUMINUM DISC WITH COPPER
ISCRIBE SPIRAL IN COPPER
COAT GROOVED SURFACE WITH ELECTRON BEAM SENSITIVE MATERIAL
SPIN OFF EXCESSIVE MATERIAL AND DRY
ELECTRON BEAM ADJUSTED NOT TO PENETRATE THRU MATERIAL COATING
EXPOSE COATED DISC WITH SIGNAL MODULATED ELECTRON BEAM
DEVELOP AND REMOVE EXPOSED AREAS
RESIDUAL MATERIAL LEFT ON WALL AND VALLEY REGIONS OF GROOVE AFTER REMOVAL OF EXPOSED AREAS
REPLICATE DISC TO FORM DISC OF OPPOSITE CONTOUR

1. A method of forming an information storing medium comprising the steps of:

forming upon a first disc substrate, a spiral-grooved surface having peak, valley and wall regions covered with a continuous coating of electron beam sensitive material;

forming a topography in said spiral groove representative of information to be stored by exposing said spiral groove to an electron beam modulated according to said information such that said electron beam does not pierce completely through said continuous coating to said substrate to thereby avoid overexposure of said coating by electron beam reflection off said substrate, and removing portions of said material in accordance with the pattern of exposure such that said wall and valley regions of said spiral groove include a continuous residuum of said material therein; and

replicating said exposed disc to form a second disc having a groove topography of opposite contour from that of said first disc, wherein said second disc is suitable to produce positive replicas of said signal modulated grooved disc.

3,943,303

ABNORMAL SOUND ELIMINATING SYSTEM IN RECORD DISC REPRODUCING APPARATUS

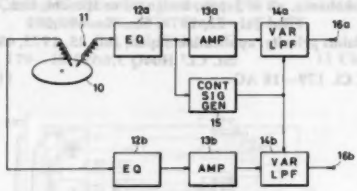
Isao Masuda, Sagamihara, and Masami Yamazaki, Zama, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed July 17, 1974, Ser. No. 489,112

Claims priority, application Japan, Aug. 13, 1973, 48-90009

Int. Cl.² H03D *3/18*; G11B *3/04*; H03D *3/24*

U.S. Cl. 179—100.4 D **6 Claims**



1. An abnormal sound eliminating system for use in a record disc reproducing apparatus, said system comprising control signal generating means operated responsive to a multiplex signal of an angle-modulated wave signal and a direct wave signal picked up from a record disc on which the multiplex signals are recorded, said generating means producing a control signal having voltage which increases responsive to an increase of frequency of the carrier wave of the angle-modulated wave up to a predetermined frequency, low-pass filter means having a variable cut-off frequency, and means responsive to said control signal for controlling the cut-off frequency of said low-pass filter means, said cut-off frequency becoming higher as the voltage of the control signal increases and being lower than the frequency of the carrier wave while the frequency of the carrier wave is lower than the predetermined frequency, whereby said low-pass filter means responds to the multiplex signals picked up from the record disc and eliminates at least the carrier wave when it is reproduced from a record disc rotating at a speed which is lower than a specified rate.

3,943,304

HEADPHONE OPERATING ON THE TWO-WAY SYSTEM

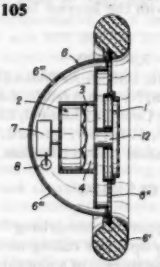
Herbert Piribauer, Wiener Neustadt, Austria, assignor to AKG Akustische u Kino-gerate Gesellschaft m.b.H., Austria

Filed June 12, 1974, Ser. No. 478,745

Claims priority, application Austria, June 19, 1973, 5406/73

Int. Cl.² H04R *23/02, 1/22*

U.S. Cl. 179—105 **8 Claims**



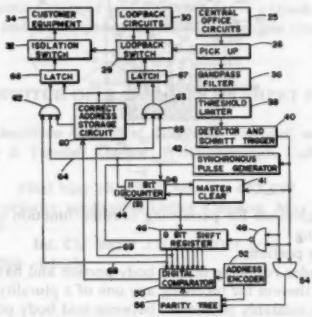
1. In a headphone operating on the two-way system, comprising a low frequency transducer system and a high frequency transducer system, with the low frequency tranducer system including an electrodynamic transducer, the headphone including a housing arranged to be engaged with the external ear of the user, the improvement comprising, in combination, an electrostatic transducer transmitting only

high frequencies and constituting said high frequency transducer system; and a supply transformer, having a very small core volume and a very small number of turns, for supplying only said electrostatic transducer system, mounted within said housing.

3,943,305
TELEPHONE LINE CONTROL SYSTEM

Guenter E. W. Hagedorn, Minneapolis, Minn., assignor to Magnetic Controls Company, Minneapolis, Minn.

Filed Nov. 11, 1974, Ser. No. 522,417
Int. Cl.² H04B 3/46
U.S. Cl. 179—175.3 R **8 Claims**



1. Apparatus for the testing of a communication circuit from one point to another remote point comprising in combination;

means for applying a binary coded series of pulses to the circuit, said coded series including an address code which always begins with one initial pulse;

sensing means in the circuit at the remote point for sensing said coded series of pulses;

comparing means connected to said sensing means for receiving said series of pulses and comparing the address code therein as it is received with a stored address code which is automatically generated at the remote point to determine if the proper address code has been received;

stored address code generating means connected to said comparing means to provide said address code in response to said initial pulse;

first switching means connected to said comparing means operable upon the reception of the proper address code to connect a loopback circuit to said communication circuit in response to the reception of the proper loopback instruction in the coded series of pulses; and

second switching means connected to said comparing means operable upon the reception of the correct address code to control an isolation switch in response to the reception of the appropriate instruction in the coded series of pulses.

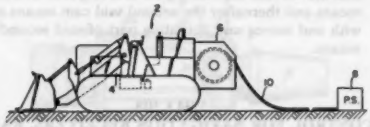
3,943,306
ELECTRIC LOADER WITH EXCESSIVE UNWIND PREVENTIVE MEANS

Toru Aihara, Sagamihara, and Koichi Kimura, Zama, both of Japan, assignors to Caterpillar Mitsubishi Ltd., Tokyo, Japan

Filed Apr. 4, 1974, Ser. No. 457,900
Claims priority, application Japan, Apr. 7, 1973, 48-41409
Int. Cl.² H02G 11/00
U.S. Cl. 191—12.2 R **3 Claims**

1. In an electrically powered vehicle having a directional control lever with a forward and reverse position to select the direction of travel, and further having a reel assembly carrying a power cable, the power cable providing electrical energy to the vehicle from a remote power source to power the electric drive motor of the vehicle, the reel assembly being operable to wind and unwind the power cable while the vehicle is moving, and having sense means for determining when a predetermined length of cable has been unwound; a power connection system comprising:

first switch means connected between the power source and said electric drive motor and operably connected to the sense means for automatically interrupting power to said electric drive motor in response to the sensing by the



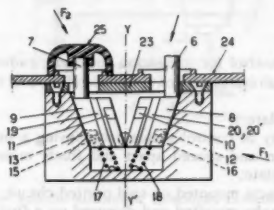
sense means when said predetermined length of cable has been unwound; and

second switch means connected between said power source and said electric drive motor and operably connected to the directional control lever for restoring power to the electric drive motor when the directional control lever is moved to its reverse position, said second switch means only being operable after said first switch means has interrupted the power to said drive motor to restore power thereto.

3,943,307
PLURAL INTERLOCKING SLIDER CAMS ALLOWING SINGLE ACTUATOR AND MULTIPLE SWITCH OPERATION

Gerard Juery, Rueil Malmaison, France, assignor to La Telemechanique Electrique, France

Filed May 24, 1974, Ser. No. 473,051
Claims priority, application France, May 30, 1973, 73.19677
Int. Cl.² H01H 9/26
U.S. Cl. 200—5 E **4 Claims**



1. Electrical switch apparatus comprising:

i. a casing

ii. a pair of first switch means and a second switch means disposed in said casing, each of said switch means including:

a. electrical contacts

b. an actuating part for actuating said contacts

c. means resiliently loading said actuating part into a rest position

iii. first and second slides

iv. interengaging guide means respectively on said first and second slides, said guide means being positioned such that said first and second slides have convergent paths, said first and second slides being arranged such that when one said slide has commenced to move from a rest position towards an actuated position it moves into the path of the other slide and prevents movement of said other slide away from rest position

v. means resiliently urging said first and second slides towards rest position

vi. first and second cam means on each said slide, said cam means being spaced in the direction of movement of the slide, the actuating parts of the first switch means being disposed in the path of travel of the first cam means and the actuating part of the second switch means being disposed in the path of travel of the second cam means, whereby during movement of said slide from rest position to actuated position the first said cam means engages with and moves said actuating part of a respective first switch means and thereafter the second said cam means engages with and moves said actuating part of said second switch means.

3,943,308
CONTROL FOR NAVIGATION RECEIVERS, RADIO COMPASSES, RADIO, AND AIRCRAFT TELEPHONY, TRANSPONDERS AND THE LIKE

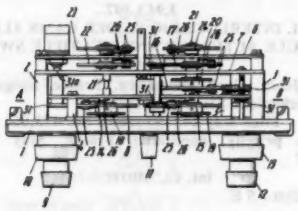
Karl Heinz Fehrenbach, Buhl; Ludwig Holl, Sandweier, and Eberhard L. Grunewald, Rastatt, all of Germany, assignors to Becker Flugfunwerk GmbH, Baden-Baden, Germany

Filed May 2, 1974, Ser. No. 466,445

Claims priority, application Germany, Aug. 18, 1973, 7330174

Int. Cl.² H01H *3/54*

U.S. Cl. 200—18 **3 Claims**



1. The control for navigation receivers, radio compasses, radio, and aircraft telephony, transponders, and the like comprising:

a front plate;

a plurality of control plates each having a printed circuit thereon and spaced apart and freely mounted to said front plate;

rest contacts mounted on said printed circuit;

rotary knobs mounted and disposed on a first shaft means in said front plate;

coupling means operatively connected to said rotary knobs;

sprocket wheels having associated ratchet wheels operatively connected with each other by said coupling means;

a plurality yieldable control contact means operatively mounted on said sprocket wheels and a second shaft means parallel to said first shaft means which cooperate with said rest contacts for operatively controlling frequencies and other operational functions;

said yieldable control contact means comprise contact discs coupled with said sprocket wheels by means of said second shaft means; and

insulating bushings mounted on said contact discs, and said sprocket wheels; wherein at least one of said control contact means is operatively disposed on said insulating bushings on said sprocket wheels and said contact discs, respectively, and said control contact means each have a yieldable front contact face which cooperates with said rest contacts such that a desired control connection is achieved.

3,943,309
LOCK MECHANISM

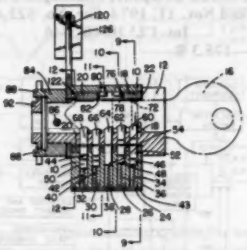
Takao Kawamoto, Odawara; Nobuyoshi Mizuno, Isehara, and Akira Ota, Hiratsuka, all of Japan, assignors to NCR Corporation, Dayton, Ohio

Filed Feb. 27, 1975, Ser. No. 553,846

Claims priority, application Japan, Mar. 29, 1974, 49-35499

Int. Cl.² E05B *35/08*

U.S. Cl. 200—44 **15 Claims**



9. Mechanism for permitting selected function operations comprising

a body portion,

a cylinder rotatable in said body portion and having a key slot therein for receiving any one of a plurality of keys,

means rotatably positioned between said body portion and said cylinder, each of said keys being operable to engage said rotatable means with either said body portion or with said cylinder,

means for limiting said rotatable means in relation to said body portion or with said cylinder, and

means connected with said cylinder for developing signal means for the selected function.

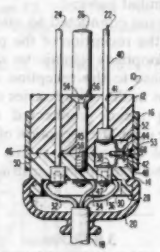
3,943,310
MALE CONNECTOR PLUG WITH IMPROVED SWITCH MECHANISM

Albert E. Gertz, 9232 Alcona St., Lanham, Md. 20801

Filed Oct. 18, 1974, Ser. No. 515,968

Int. Cl.² H01R *13/70*

U.S. Cl. 200—51 R **3 Claims**



1. In an electrical connector plug including a body of electrically insulative material, and a plurality of metal conductive prongs projecting axially through said body in circumferentially spaced positions, and wires electrically connected respectively to said prongs, the improvements wherein:

at least one of said prongs comprises first and second axially spaced, aligned sections,

a plate formed of electrically insulative material is positioned within said body and selectively movable between two positions, one of which insures completion of an electrical circuit between said prong sections and the

other wherein a portion of said insulated material is interposed between said prong sections,

said body is cylindrical in form, and a sleeve is mounted concentrically on said body for rotation about a common axis and said plate comprises a radial projection on the inner periphery of said sleeve, which projects inwardly within said body and is interposed between said prong sections upon rotation of said sleeve, and

said body comprises abutting cylindrical sections, a recess is provided in the abutting end of at least one of said cylindrical sections, said first and second axially spaced aligned prong sections have their axes intersecting said recess, opposed flexible contacts are carried by respective prong sections within said recess, and said radially projecting plate of said rotatable sleeve extends into said axis and is interposed between said flexible contacts.

3,943,311
MICRO-SWITCH OPERATED WEB OR SHEET FEEDING APPARATUS

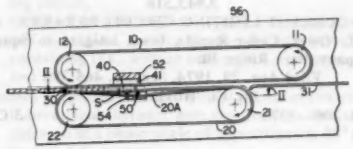
Adi Kaikhushiroo Ashburner, Hargrave, England, assignor to Harper & Tunstall Limited, Wellingborough, United Kingdom

Filed May 28, 1974, Ser. No. 473,599

Claims priority, application United Kingdom, May 29, 1973, 25524/73

Int. Cl.² B65H *25/14*; H01H *3/16*

U.S. Cl. 200—61.13 **6 Claims**



1. A micro-switch operated apparatus for feeding web material, including webs and sheets, comprising first and second sets of endless bands respectively trained around co-operating pairs of driven and driving rollers, the opposed reaches of the bands in each set being movable in the same direction and defining a passageway for conveying web material between the bands, a deflector fixedly located with respect to the rotative axes of said rollers and disposed in said passageway, said deflector engaging and deflecting the passageway defining reach of at least one of the bands of the second set away from the bands of the first set, and a micro-switch mounted fixedly with respect to said roller axes and located laterally between adjacent bands of the first set with an actuating member of the micro-switch disposed in the space between the deflected reach of the bands of the second set and the opposed reaches of the bands of the first set.

3,943,312
FIRE HOSE NOZZLE COUPLER SWITCH

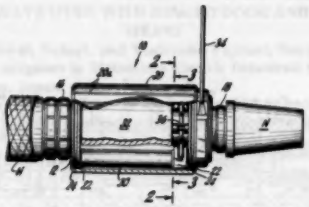
Joel L. Bernstein, Commack, and Paul E. Kovach, Syosset, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Feb. 14, 1975, Ser. No. 550,041

Int. Cl.² H01H *3/16, 9/06, 21/16*

U.S. Cl. 200—61.58 R **6 Claims**

1. An electrical switch assembly for use in a fluid line having a hose and fluid dispensing device, which comprises: a housing defining a longitudinally extending fluid chamber, one end of said housing adapted to be coupled to said hose and the other end adapted to be coupled to said dispensing device; two reed switches adapted to be opened and closed by movement of a magnet in the vicinity thereof; means for mounting said reed switches in angularly spaced-apart relationship on said housing; manually graspable actuator means mounted for rotation about the longitudinal axis of said housing, said actuator means carrying a magnet for movement along a path overlying each of said reed switches; and biasing means for positioning said magnet at a central position in said path between said



reed switches, whereby said magnet may be displaced by manual application of torque to the actuator means to energize the reed switch in the path of rotation and returned to said central position when said torque is released.

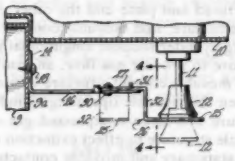
3,943,313
AUTOMOTIVE DOOR ACCESSORY FOR TURNING OFFICE VEHICLE HEADLIGHT SWITCH

Aldo J. Carboni, 4642 W. El Segundo Blvd., Hawthorne, Calif. 90250

Filed Mar. 4, 1975, Ser. No. 555,291

Int. Cl.² H01H *3/16*

U.S. Cl. 200—61.62 **7 Claims**



1. A motor vehicle automatic headlight turnoff switch assembly comprising:

a support arm having means at one end for attachment to an inner upstanding surface of a horizontally swingable vehicle door in position to locate the unattached end of said arm adjacent the operator's end of a headlight switch-rod which is longitudinally reciprocable between IN and OUT positions, the latter position serving to keep the headlights on,

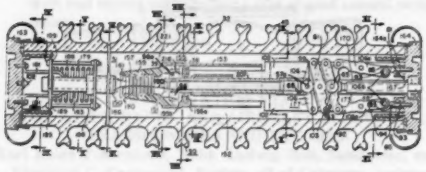
an abutment member carried by the unattached end of said support arm, being movable between alternate positions, (*a*) axially adjacent the end of the switch-rod when the latter is at IN position, so as to block the switch-rod being drawn to OUT position, and (*b*) laterally retracted therefrom so as to permit the switch-rod to be drawn to OUT position, said member being biased to normally occupy position (*a*) and thus automatically to assume such position upon the vehicle door being opened, whereby closing the door causes the abutment member to frictionally abut the switch-rod when OUT positioned and push it to IN position, thereby extinguishing the headlights operated by the switch-rod.

3,943,314

MOTION-MULTIPLYING LINKAGE-MECHANISM FOR SEALED-CASING STRUCTURES

Russell E. Frink, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 14, 1974, Ser. No. 469,932
Int. Cl.² H01H 33/88
U.S. Cl. 200—148 A 3 Claims



1. A gas-type puffer circuit-interrupter comprising a sealed-casing structure having a relatively stationary contact disposed adjacent one end thereof and a movable contact cooperable with said stationary contact and operable out of an apertured plate at the other end of said sealed-casing structure, a movable contact operating rod extending interiorly into the sealed-casing structure to operate the movable contact therein, a sylphon bellows sealed to one end of said end plate of the sealed-casing structure through which the movable contact rod extends, the other end of the sylphon bellows being sealed to an intermediate portion of the movable contact-operating rod, a lazy-tong motion-multiplying operating linkage mechanism interposed between the inner end of the movable contact operating rod and the movable contact structure, a longitudinally-extending guide-means for the lazy-tong operating mechanism having one end affixed to the said apertured end plate and the other end supporting a fixed piston structure, said movable contact carrying a movable operating cylinder slidable longitudinally over said fixed piston structure to provide gas flow, an insulating nozzle secured to said movable contact structure whereby compression of gas between the movable operating cylinder and the fixed piston structure will force compressed gas out through the movable nozzle structure to effect extinction of the arc drawn between the stationary and movable contacts.

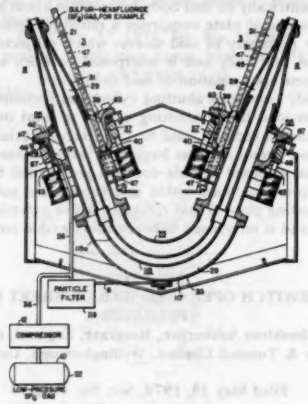
3,943,315

HIGH-VOLTAGE GAS-TYPE CIRCUIT-INTERRUPTER HAVING IMPROVED GAS-PARTITIONING AND PARTICLE COLLECTING MEANS

Maurice J. Taylor, Dedham, Mass.; Stephen D. Northrup, Woodstock, Ill., and Wayne S. Aspey, Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 21, 1973, Ser. No. 427,279
Int. Cl.² H01H 33/57
U.S. Cl. 200—148 B 14 Claims

1. A high-voltage circuit-interrupter of the gas-blast type including separable contact means separable to establish an arc, blast-valve means for causing a blast of gas to flow against the arc to effect the extinction thereof, operating means to effect the separation of said separable contact means, an elongated high-voltage conductor leading to one of the separable contacts, an annular grounded metallic collector chamber (37) of relatively short length surrounding said high-voltage conductor yet spaced outwardly therefrom, the inner wall of said collector chamber (37) comprising a metallic sheath (117) at ground potential surrounding said high-voltage conductor, and conduit means providing gas-communication between said annular grounded relatively-short metallic collector chamber (37) and the gaseous region adjacent said separable contact structure.

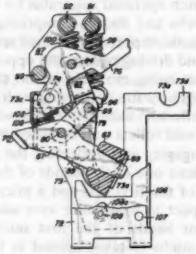


3,943,316

CURRENT LIMITING CIRCUIT BREAKER

Clark L. Oster, Cedar Rapids, Iowa, assignor to Square D Company, Park Ridge, Ill.

Filed Apr. 29, 1974, Ser. No. 465,398
Int. Cl.² H01H 21/18
U.S. Cl. 200—337 3 Claims



1. An electric circuit breaker comprising a molded case, a molded movable contact blade mounting member pivotally mounted in the case, and a movable contact blade mounted in the mounting member, said movable contact blade including a tapered mounting tongue portion tapering to one end thereof, said tapered mounting tongue portion extending completely through the mounting member from one side, the said one end being staked to a retaining plate on the opposite side.

3,943,317

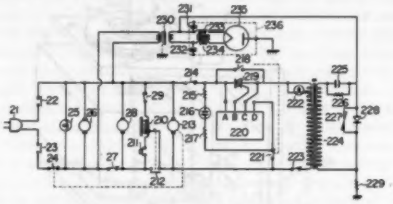
MICROWAVE OVEN POWER SUPPLY CIRCUIT

Schun-ichi Nagamoto, Nara, Japan, assignor to Matsushita Electric Industrial Company, Ltd., Osaka, Japan

Filed July 15, 1974, Ser. No. 488,683
Claims priority, application Japan, July 18, 1973, 48-81796; Feb. 20, 1974, 49-20803
Int. Cl.² H05B 9/06
U.S. Cl. 219—10.55 B 2 Claims

1. A microwave oven power supply circuit, comprising:

a microwave oscillator;
an A.C. source;
a high voltage transformer having a primary winding coupled to said A.C. source and a secondary winding coupled to said microwave oscillator;
a bidirectional thyristor coupled between said primary winding and said A.C. source; and
a control circuit coupled to a gate electrode of said bidirectional thyristor for controlling the ON-OFF switching of said thyristor to thereby control the flow of current between said A.C. source and said transformer primary, said control circuit including:

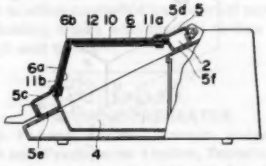


a rectifying circuit coupled to said A.C. source for rectifying and smoothing the A.C. source voltage to obtain a ripple-containing D.C. voltage as its output,
a negative gate thyristor astable multivibrator circuit coupled to and controlled by the output of said rectifying circuit,
a transistor circuit coupled to said astable multivibrator and to said A.C. source for superimposing said ripple-containing D.C. voltage onto said A.C. source voltage, and
means coupling the output of said transistor circuit to said bidirectional thyristor gate electrode to turn said thyristor on at a phase angle of approximately 80° relative to said A.C. source.

3,943,318
MICROWAVE OVEN WITH TRIANGULAR OBSERVATION WINDOW

Kazumi Hirai, Nabari, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Feb. 24, 1975, Ser. No. 552,146
Claims priority, application Japan, Feb. 28, 1974, 49-24466
Int. Cl.² H05B 9/06
U.S. Cl. 219—10.55 D **5 Claims**

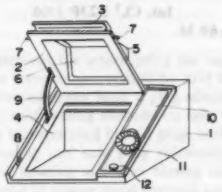


1. in a high frequency microwave oven, an oven forming structure comprising upper, lower, rear and side walls which define an opening, for inserting an object to be heated therethrough, into said oven structure, a front wall constituted by a hingedly supported door with the hinge axis of said door located at an upper edge of said door for selectively opening or closing said opening, said door forming a heating chamber in cooperation with said oven structure upon closure of said door, means for supplying high-frequency energy to said heating chamber, and means for sealing the door for preventing electric waves from leaking through periphery of said door upon closure thereof, said door being formed thereon with a transparent observation window including at least two flat surfaces, one of which surfaces is disposed in a direction approximately parallel to a surface of said upper wall of said oven structure and the other of which surfaces is disposed in a direction approximately normal to a surface of said lower wall of said oven structure.

3,943,319
MICROWAVE OVEN WITH HINGED DOOR AND LATCH MEANS

Kazumi Hirai, Nabari, and Yoshitomo Fujitani, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Feb. 24, 1975, Ser. No. 552,147
Claims priority, application Japan, Feb. 26, 1974, 49-23403
Int. Cl.² H05B 9/06
U.S. Cl. 219—10.55 D **8 Claims**



1. A microwave oven having a magnetron assembly which radiates microwaves into a heating chamber, which comprises a casing structure having an access opening leading into a cavity defined by said casing structure; a hingedly supported door hinged at the top thereof to the front edge of a top wall member of said casing structure for selectively opening and closing said access opening by the application of upwardly pulling and downwardly pushing forces to said door, respectively, said door being formed with a substantially outwardly concaved cavity which cooperates with said cavity of said casing structure to define said heating chamber when said door is in position to close said access opening; means for locking said door in the closed position; means for preventing said microwaves from leaking from around said hingedly supported door during closure of said door; and means for biasing said door towards an opened position.

3,943,320
FRANKFURT SEARING TRAY FOR USE WITH MICROWAVE ENERGY

Robert F. Bowen, Burlington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed June 19, 1975, Ser. No. 588,447
Int. Cl.² H05B 9/06
U.S. Cl. 219—10.55 E **3 Claims**

1. An apparatus for heating circular elongated objects with microwave energy comprising:
a plurality of curved conductive members surrounding a substantial portion of the objects to be heated;
means for supporting said members;
each of said conductive members defining two leg portions and a continuous apex portion;

said leg portions having a length substantially equal to one-quarter of a wavelength of the microwave energy utilized; said conductive members providing adjacent to the ends of said leg portions an intense out-of-phase fringing electric field pattern when radiated by microwave energy.

3,943,321

PROCESS AND APPARATUS FOR ELECTRO-EROSION MACHINING BY ELECTRICAL DISCHARGES EMPLOYING VARIABLE CUT-OFF TIME INTERVALS BETWEEN PULSE TRAINS AND/OR PULSE TRAINS OF VARIABLE DURATIONS

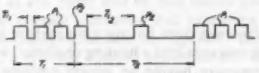
Jean Pfau; Heinz Rhyner, and Francois Balleys, all of Geneva, Switzerland, assignors to Ateliers des Charmilles, S.A., Geneva, Switzerland

Filed Aug. 24, 1973, Ser. No. 491,503

Claims priority, application Switzerland, Aug. 28, 1972, 12683/72

Int. Cl.² B23P *1/08*

U.S. Cl. 219—69 M **17 Claims**



1. In a process for machining a workpiece by means of intermittent electro-erosive discharges resulting from providing controlled voltage and current pulses across a gap formed between an electrode tool and said workpiece, said pulses being obtained from at least one DC source switched on and off across said gap for providing cut-off time intervals of a predetermined duration during which no substantial voltage is applied across the gap to prevent said discharges from occurring, the improvement comprising controlling the average current across said gap by cyclically and repetitively varying the duration of said cut-off time intervals, wherein a first train of pulses is applied across said gap during a predetermined time period T_1, said pulses in said first train being separated by a cut-off time interval T_{11} of predetermined duration, and a second train of pulses alternating with said first train of pulses is applied across said gap during a predetermined time period T_2, said second train of pulses having separated by a cut-off time interval T_{12} of predetermined duration.

3,943,322

WIRE ELECTRO-EROSION MACHINING APPARATUS

Hans Lehmann; Roger Girardin; William Morf, and Roger Delpretti, all of Geneva, Switzerland, assignors to Ateliers des Charmilles, S.A., Geneva, Switzerland

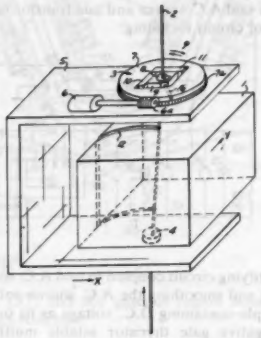
Filed July 26, 1974, Ser. No. 492,254

Claims priority, application Switzerland, Aug. 6, 1973, 11344/73

Int. Cl.² B23P *1/08*

U.S. Cl. 219—69 E **7 Claims**

1. In an electro-erosion machining apparatus comprising a wire electrode stretched and axially translated between a pair of spaced apart wire guiding means and means for displacing the portion of said wire stretched between said guiding means relative to a workpiece to effectuate a cut through said workpiece according to a programmed path, the improvement for at least one of said guiding means comprising a pair of angularly disposed guide surfaces substantially parallel to the longitudinal axis of said wire electrode, means urging said wire electrode in engagement with said guide surfaces, support means for said guide surfaces, and means for rotating said



support means about an axis substantially corresponding to the longitudinal axis of said wire electrode as a function of the direction of said path such that the areas of the wire electrode in engagement with said guide surfaces correspond to areas of the wire electrode which are not affected by electro-erosion wear.

3,943,323

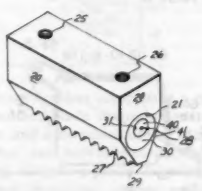
BONDING APPARATUS

Gerald C. Smith; Dennis L. Ellingson; Colin A. Johnson, all of Sidney, N.Y., and Seong K. Rhee, Livonia, Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Aug. 23, 1974, Ser. No. 499,890

Int. Cl.² B23K *3/00*

U.S. Cl. 219—85 **15 Claims**



1. A bonding apparatus comprising:

an elongated body having a longitudinal axis, a longitudinal passage, a first side, a second side opposite said first side, a third side adjacent to and extending between said first and second sides, and a tapered portion comprised of two sides tapering towards each other from said first and second sides respectively and terminating in a sixth surface which is opposite said third side, said elongated body comprised of a material having a thermal conductivity K in units of Btu/(hr)(sq ft)(°F/in.) at 70°F of less than 100,

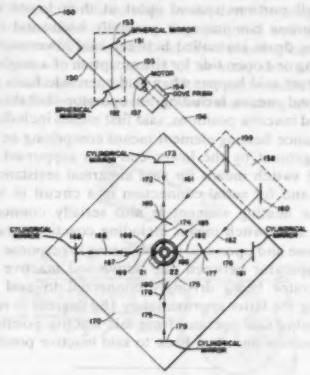
a conduit having a bore, said conduit mounted in the longitudinal passage of said elongated body, said conduit comprised of a material having a thermal conductivity at 70°F of greater than 2000.

3,943,324

APPARATUS FOR FORMING REFRACTORY TUBING

John S. Haggerty, Lincoln, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 97,603, Dec. 14, 1970, abandoned. This application Dec. 27, 1972, Ser. No. 318,911
Int. Cl.[2] B01J 17/00
U.S. Cl. 219—121 L 15 Claims



1. An apparatus for forming refractory tubing, comprising in combination

a. tube holding means adapted to hold each end of a refractory tubing separately;

b. heating means for forming a molten ring in said refractory tubing, said ring being of essentially uniform height throughout said tubing said height being such that the forces of surface tension and gravity maintain said molten ring connected to the solid sections of said tubing, said heating means comprising

1. laser means providing at least one beam of radiant energy;

2. optical means including means for expanding said beam, means for splitting the resulting expanded beam into a plurality of beams essentially equally spaced around the surface of said tubing, and means for focusing each of said plurality of beams onto said surface of said tubing within a heating zone surrounding said tubing and providing essentially uniform heating of said tubing surface; and

c. means to effect controlled translational movement of said tube holding means whereby said molten ring advances through said tubing.

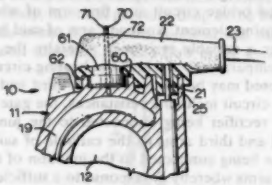
3,943,325

ENGINE PREHEATER

Bernard H. Pickard, Toronto, Canada, assignor to Bardon Research and Development Limited, Toronto, Canada

Continuation-in-part of Ser. No. 321,455, Jan. 5, 1973, which is a continuation-in-part of Ser. No. 159,816, July 6, 1971, abandoned. This application Oct. 15, 1974, Ser. No. 514,661
Int. Cl.[2] F02N 17/04; F24H 1/10; H05B 1/02
U.S. Cl. 219—208 8 Claims

1. A heater for the coolant of a liquid cooled engine, said heater being of a type adapted to be connected in a hose between a liquid cooled engine and a radiator, said heater comprising a housing having a passage extending therethrough for passage of coolant through said heater, said housing having first and second end sections and an intermediate section, said intermediate section being cast of heat conductive material and being located between said end sections, said end sections being adapted to be connected to a radiator hose, an electric heating element cast in place in and embedded in said intermediate section and separated from the passage through said housing by part of said housing, whereby coolant flowing through the passage in said housing is inhibited from direct contact with said heating element but indirectly is heated thereby, said heating element having exposed terminals, a thermostat located in heat transfer relationship with said housing on the side of said heating element remote from said passage, said thermostat being responsive to the temperature



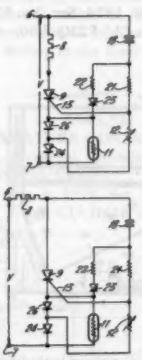
of said heating element for interrupting the supply of power thereto when the temperature sensed by said thermostat exceeds a predetermined upper limit, a plug adapted for electrical connection to said heating element via said terminals, said thermostat being incorporated in said plug, and means acting between said housing and said plug releasably biasing said plug towards said housing and also biasing said thermostat against said housing to assure good thermal contact between said thermostat and said housing.

3,943,326

TEMPERATURE CONTROL CIRCUIT FOR A HAND HELD SOLDERING TOOL

Colin John McKenzie Henry, Glen Waverley, Australia, assignor to Royel International Pty. Ltd., Doncaster, Australia

Filed Nov. 23, 1973, Ser. No. 418,654
Claims priority, application Australia, Nov. 24, 1972, 1347/72; United Kingdom, Sept. 14, 1973, 43270/73
Int. Cl.[2] H05B 1/02; B23K 3/04
U.S. Cl. 219—241 3 Claims



1. In an electrical soldering iron in which a soldering tip is heatable to a predetermined operating temperature to perform a soldering operation by means of an electrical heater element and in which electrical heating and control circuits are provided to supply electric current to the heater element in response to predetermined changes in temperature of said soldering tip, the improvement which comprises:

a. an electrically conducting sensing element operatively connected with said soldering tip having a resistance to current flow which increases with a rise in its temperature

whereby its temperature will rise and fall and its electrical resistance will increase and decrease as the temperature of the soldering tip rises and falls;

b. said heating circuit having a controlled rectifier as a switch therein;

c. said control circuit being adapted to regulate said controlled rectifier to open and close the said heating circuit in response to a predetermined change in the resistance of said sensing element, said control circuit comprising a balanced bridge circuit as a first arm of which includes said sensing element, a second arm of said bridge circuit includes a variable resistance whereby the sensing element temperatures at which the heating circuit is opened and closed may be predetermined, third and fourth arms of said circuit including resistances, the gate of said controlled rectifier being connected to the junction of the second and third arms of the cathode of said controlled rectifier being connected to the junction of said first and fourth arms whereby in response to a sufficient electrical potential imbalance across the bridge the controlled rectifier is triggered into conduction; and

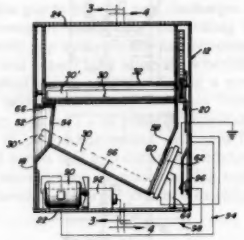
d. a bias compensating diode is connected between said first and second arms, the cathode thereof being connected to the first arm and to said heating circuit, the anode of said bias compensating diode being connected to said second arm and through a current limiting diode to the cathode of said controlled rectifier thereby to limit the current and to balance the bias of said controlled rectifier upon said bridge, said fourth arm including a diode to balance the effect upon the bridge of the bias compensating diode whereby heating current flowing through the controlled rectifier, bias compensating diode and current limiting diode will heat the bias compensating diode thereby lowering its voltage and providing an electrical imbalance to said bridge to lower the predetermined temperature at which the heating circuit will be opened.

3,943,327

CIGARETTE DISPENSER AND AN ELECTRIC LIGHTER

Gabor Vizelyi, 330 Michigan Ave., Miami Beach, Fla. 33139, and Bela Meszaros, 9205 Byron Ave., Surfside, Miami Beach, Fla. 33154

Filed Dec. 18, 1974, Ser. No. 534,140
Int. Cl.² F23Q 7/00
U.S. Cl. 219—261 **3 Claims**



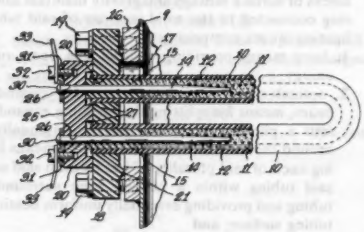
1. A lighted cigarette dispenser including a support housing including an upper portion for storing a plurality of cigarettes in horizontal position and a lower portion including first means for catching and supporting a cigarette dispensed theretoward by gravity from said upper portion, said upper portion including second means for dispensing single horizontal cigarettes downwardly from said upper portion by gravity toward said support means, said first means including means for supporting a dispensed cigarette in an inclined position, said housing including abutment means therein below said dispensing means for abutment by one terminal end of a cigarette downwardly dispensed from said second means to check the descent of said one terminal end and thereby cause the cigarette to be angularly displaced to an inclined position for catching by and support from said first means, an upstanding side wall portion having an opening formed therethrough closely beneath said abutment means, said opening being positioned in relation to said first means whereby an inclined cigarette supported from said first means will have the upper end thereof disposed in a position projecting through said opening, said upper portion defining an upwardly opening elongated storage hopper including downwardly convergent lower wall portions spaced apart at their lower ends, said second means comprising a generally horizontal cylindrical dispensing drum journalled between said lower wall portions and having one open side for the reception of a single cigarette therein from said hopper when said open side faces upwardly, said second means including an operator shiftable between active and inactive positions, said first means including electrical resistance heating element means comprising an abutment for engagement by the lower end of a supported cigarette, electrical switch means for said electrical resistance heating element and for serial connection in a circuit in which said resistance heating element is also serially connected, said operator and switch means including coacting means operative to close and open said switch means in response to shifting of said operator between said active and inactive positions, said operator being drivingly connected to said drum for oscillating the latter approximately 180 degrees in response to movement of said operator from said inactive position, to said active position and then back to said inactive position.

3,943,328

ELECTRIC HEATING ELEMENTS

Donald M. Cunningham, Pittsburgh, Pa., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 11, 1974, Ser. No. 531,664
Int. Cl.² H05B 1/00; F24B 1/00; H05B 3/04
U.S. Cl. 219—335 **17 Claims**



1. An electric heating element, comprising:
a tubular thermoplastic sheath,
a resistance member within said sheath,
compacted heat-conducting material within said sheath for spacing said resistance member from the inner wall surface of said sheath,
and a mounting member having a hole therein for receiving an end of said sheath, said sheath end being sealed to said mounting member to prevent fluid from passing through said hole.

3,943,329

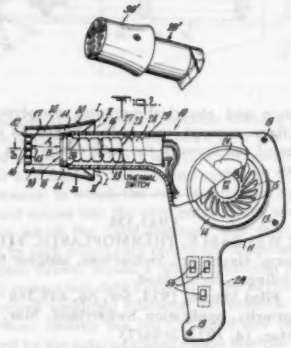
HAIR DRYER WITH SAFETY GUARD AIR OUTLET NOZZLE

Andrew E. Hlavac, Long Valley, N.J., assignor to Clairol Incorporated, New York, N.Y.

Filed May 17, 1974, Ser. No. 470,886
Int. Cl.² H05B 1/00; F24H 3/04; F04B 23/14; A45D 20/12
U.S. Cl. 219—367 **8 Claims**

1. A hair dryer comprising a housing, said housing defining an air inlet and an air outlet, blower means disposed within the

housing for drawing a stream of air into the air inlet, through the dryer housing and forcing it out the air outlet, said air outlet being generally in the shape of a square, heating means disposed within the housing for heating the stream of air as it passes through the dryer housing and a guard member secured to the dryer housing over the air outlet and in communication therewith so that air flowing from said outlet flows through said guard member, said guard member having an open end, an air exit, and a casing generally in the shape of a truncated pyramid in spaced relationship to the dryer housing providing flow communication between the open end and air exit, the space between the casing and the dryer housing having a cross sectional area at the air outlet of at least about 50% of the cross-sectional area of the air outlet, to allow sufficient heated air from the air outlet to exit between the casing and the dryer



housing out the open end in the event of complete blockage of the air exit of said guard member without causing overheating of the heating means, dryer housing or guard member, or alternatively under normal operation with no blockage present, to allow a sufficient flow of ambient air to be induced to flow into the open end and through the space as a result of the flow of heated air from the air outlet through the air exit, the ambient air mixing with the heated air passing through said air exit, a protective grill over the air exit and means for maintaining the casing in spaced relationship with respect to the dryer housing, wherein the distance between the protective grill and the air outlet is greater than about one-half the inside width of the air outlet and wherein the protective grill contains air outlet openings having a total area greater than the cross-sectional area of the air outlet.

3,943,330

METHOD AND APPARATUS FOR ELECTRICALLY HEATING A FLUID

James Francis Pollock, Henley; Peter Douglas Dunn, Moulsford; Graham Rice, Reading, and Basil Dixon Power, Crawley, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

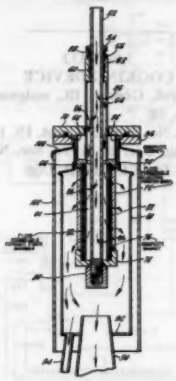
Filed Feb. 25, 1974, Ser. No. 445,421

Claims priority, application United Kingdom, Feb. 26, 1973, 9441/73

Int. Cl.² H05B *3/14*; F24H *1/10*

U.S. Cl. 219—381 **22 Claims**

1. In a fluid heating arrangement, a device for heating a fluid comprising a fluid permeable, porous, electrical resistance heater body having electrical input and output ends and a fluid entry surface, a fluid permeable, porous flow control member which covers the fluid entry surface of said heater body, said flow control member having a fluid entry surface, a fluid supply communicating with the entry surface of said flow control member, said flow control member being oriented such that the static pressure head of the fluid varies over the entry surface of the flow control member, the flow control member being made of a material which has a higher electrical resistance than the heater body, a lower thermal conductivity than the heater body, and a uniform distribution of interconnected pores throughout its entirety, the permeability of the combination of the heater body and the flow control member being such that the impedance of the heater body and the flow control member to flow of said fluid causes a drop in pressure in the fulid as it passes through the flow control member and the heater body, the total pressure drop in the fluid across the combination of the flow control member and the heater body in the general direction of fluid flow being greater than said



variations in static pressure head of the fluid at the entry surface of the flow control member so as to promote a uniform flow of the fluid through the heater body even in the presence of significant differences in static pressure head over the fluid entry surface of the flow control member, said flow control member acting as a thermal impedance barrier such that heat generated by a heater body is transferred to the fluid permeating through the device but does not, by thermal or electrical conduction, or thermal radiation, heat the fluid at the entry surface of the flow control member to a temperature high enough to cause boiling in the fluid before it enters the flow control member.

3,943,331

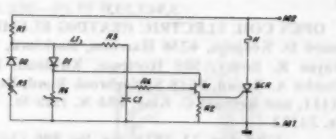
TEMPERATURE CONTROL CIRCUIT

Robert S. Meijer, Montreal, Canada, assignor to Multi-State Devices, Ltd., Dorval, Canada

Filed Dec. 6, 1974, Ser. No. 530,388

Int. Cl.² H05B *1/02*

U.S. Cl. 219—499 **5 Claims**



1. A temperature control circuit for controlling the firing angle of a thyristor connected in series with a heater across an alternating power source, comprising:

a. a field effect transistor having its source and drain electrodes connected for firing of the thyristor when said field effect transistor is rendered conductive; and

b. a bias phase control circuit connected to the gate of said field effect transistor and including means for generating a fixed A.C. voltage component which is phase shifted

with respect to the voltage of said power source and means for generating a temperature dependent D.C. voltage to control the firing angle of said thyristor in accordance with the heat generated by said heater, the sum of said A.C. and D.C. voltage components being fed to the gate of such field effect transistor, said means for generating said temperature dependent D.C. voltage component comprising a parallel arrangement including an adjustable resistor connected in series with a first diode and a temperature sensitive resistor connected in series with an oppositely poled second diode, each of said diodes being poled so as to produce a more negative D.C. voltage component with increasing temperature and vice-versa.

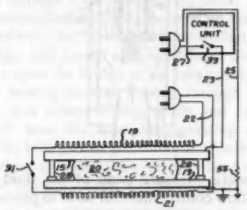
3,943,332
COOKING DEVICE

Richard Eugene Marsh, Geneva, Ill., assignor to Marsh Products, Inc., Geneva, Ill.

Continuation of Ser. No. 398,657, Sept. 19, 1973, abandoned. This application Dec. 20, 1974, Ser. No. 534,906

Int. Cl.² H01H *3/06*

U.S. Cl. 219—520 **6 Claims**



1. An electrical energy cooking device for cooking food, comprising, in combination, first and second plate electrodes positionable in spaced relation to one another for forming a cooking compartment of pre-determined minimum thickness, means for heating said plates to thereby pre-heat the said plates to transfer heat from said plates to said food placed therebetween, and first and second electronic control means connected to said electrodes to selectively couple electrical energy by means of said electrodes through said food, said first electronic control means controlling the total electrical energy applied to said food in response to a selected level, and said second electronic control means controlling and maintaining the rate at which said electrical energy is applied to said food relatively constant at a selected level during a selected cooking period.

3,943,333
OPEN COIL ELECTRIC HEATING ELEMENTS

Leonard D. Kokjohn, 4238 Harrison, Rockford, Ill. 61111; Wayne R. Seeley, 505 Hortense, Kirkland, Ill. 60146; Charles A. Brown, 5548 Springbrook Road, Rockford, Ill. 61111, and Reynold C. King, 854 N. 18th St., Wytheville, Va. 24382

Filed Aug. 23, 1974, Ser. No. 500,134

Int. Cl.² H05B *3/06*

U.S. Cl. 219—532 **2 Claims**

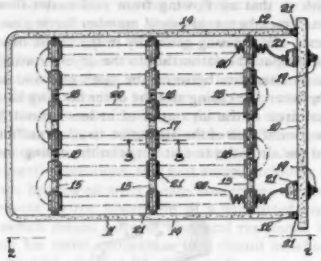
1. An open coil electric heating element, comprising:

a metal frame support formed of a plurality of metal members which are rigidly connected together,

a plurality of insulator bushings carried by said frame support in predetermined spaced manner,

a coiled bare resistance wire strung through said insulator bushings and adapted to be connected to a source of electricity to produce heat, and

a coating of silicone resin-based coating composition on said frame support, said coating being applied in flowable form to cover all exposed surfaces of said frame support, the coating drying to a rigid state to provide corrosion-



resistance and electrical-insulating properties to said metal frame support, said coating filling all cracks and crevises of and between the parts comprising said frame support.

3,943,334
HEAT WELDABLE, THERMOPLASTIC FITTING

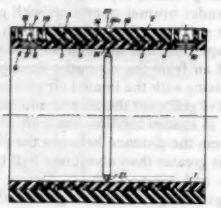
Werner Sturm, Hagendorf, Switzerland, assignor to Von Roll AG, Gerlafingen, Switzerland

Filed Mar. 8, 1974, Ser. No. 449,358

Claims priority, application Switzerland, Mar. 14, 1973, 3605/73; Mar. 14, 1973, 3606/73

Int. Cl.² H05B *3/58*

U.S. Cl. 219—544 **10 Claims**



1. Unitary heat-weldable thermo-plastic fitting for assembly over heat weldable pipe comprising

an inner part (1) of tubular, thermoplastic material and having an inner diameter corresponding to the outer diamerter of the pipe,

a heating wire (5) spirally wound about the outer circumference of the inner part and electrically accessible externally of the fitting; an outer part (16) of tubular, thermoplastic material surrounding the inner part and covering the spiral winding (5);

the inner part (1) being arranged in two axially separated end portions (2, 3) adjacent the ends of the fitting and a central portion (14) connecting the end portions (2, 3);

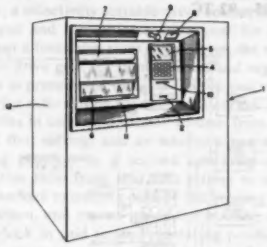
the outer circumference of the end portions (2, 3) of the inner part (1) being formed with spirally arranged grooves (4);

and wherein the wire (5) is located in said grooves (4) and includes a connecting segment (15) connecting the wire in the grooves of said axially separated end portions (2, 3) and passing across the central portion (14).

3,943,335
AUTOMATIC BANKING EQUIPMENT

Donald E. Kinker, and Herbert Morello, both of North Canton, Ohio, assignors to Diebold, Incorporated, Canton, Ohio

Filed Sept. 3, 1974, Ser. No. 502,898
Int. Cl.[2] G09B 3/02, 7/02; G06K 7/10
U.S. Cl. 235—61.7 B 8 Claims



1. In automatic multiple-transaction banking equipment of a type in which a remote vault-like unit has manual entry keyboard means, card entry means, card reader means, cash dispenser and delivery means, and customer accessible cash drawer means; in which the unit is activated by the entry of coded card means into the card entry means and card reader means; in which the cash dispenser and delivery means is actuated by such coded card means and is operative to deliver to said cash drawer means a selected amount of cash determined by transaction data keyed in at the keyboard means by an authorized identified customer for removal by such customer whose identity has been verified and the transaction authorized by the entry of coded means into the unit; in which the coded means includes data contained on the coded card means and also customer verifying and transaction data keyed in at the keyboard means; and in which the coded card means has the identity of the customer encoded thereon; the combination of programmable display means including a single display panel, and means for selectively presenting at the single display panel one of a series of successive message instructions for a selected one of a plurality of different banking transactions which at least includes a cash dispensing transaction; the message instructions for any selected banking transaction comprising instructions to the customer for the entry of customer verifying and transaction data at the keyboard means to conduct the selected transaction; the programmable display means also including means for displaying at the single display panel concurrently with the display of banking transaction message instructions, the identity of the customer encoded on the coded card means and read by the card reader means; the programmable display means also including means for displaying at the single display panel at least portions of the transaction data keyed in at the keyboard means, concurrently with the display of at least certain of said banking transaction message instructions; whereby the concurrent display at the single display panel of banking transaction message instructions and certain transaction data permits customer errors to be detected and corrected.

3,943,336
PHOTOELECTRIC SCANNING SYSTEMS FOR READING DATA APPEARING IN AN ANGULAR FORMAT

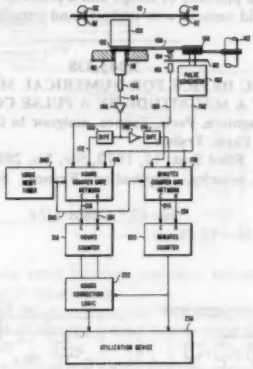
John W. Dillard, and Dominick Tringali, both of Columbia, S.C., assignors to Universal Business Machines, Columbia, S.C.

Filed June 9, 1970, Ser. No. 44,740
Int. Cl.[2] G06K 7/10, 19/06; G08C 9/06
U.S. Cl. 235—61.11 E 17 Claims

1. A data record sensing system operative to retrieve data relating to time, the data appearing on a record member as scanning marks angularly related in a circular format, and the system being operative to convert such data into electrical signals, the system comprising:

a rotatable scanner head mounting scanning mark sensors and a scanner signal generator, the sensors being effective upon rotation of the head to switch the generator on upon sensing a first scanning mark and off upon sensing a second scanning mark,

a rotatable pulse generator providing a constant number of pulses for each complete rotation of the generator and providing a reference pulse whenever the mark sensors



are located in a predetermined position relative to the circular format on the record member;

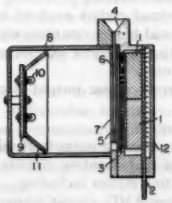
pulse counting means for providing a system output comprising an electrical binary analogue of the data appearing on said record member; and

circuit means responsive to said reference pulse to connect said pulse counting means to receive pulses from said generator and responsive to signals from said scanner signal generator for inhibiting the further receipt of said pulses by said pulse counting means.

3,943,337
PHOTOELECTRIC PUNCHED CARD READING DEVICE

Toshio Yamashita, Hirakata; Toshiro Kotake, Higashi-Osaka; Nobuo Hasegawa, Uji; Manabu Yoshida, Osaka, and Saburo Kitamura, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Company, Ltd., Osaka, Japan

Continuation of Ser. No. 262,288, June 13, 1972, abandoned.
This application Apr. 1, 1974, Ser. No. 456,472
Claims priority, application Japan, June 17, 1971, 46-44177
Int. Cl.[2] G06K 7/10; G11B 7/00
U.S. Cl. 235—61.11 E 1 Claim



1. A photoelectric punched card reading device comprising an integral combination of a main body including a card load-

ing section and an aperture mask having a plurality of holes corresponding to perforated holes on cards inserted in said loading section, said card loading section and said aperture mask being assembled integrally; a light sensor matrix plate including a printed circuit board and a plurality of light sensors having diode characteristics arranged on said board, the arrangement of the light sensors comprising a matrix corresponding to the holes in the aperture mask, wherein a plurality of bus bars are arranged in lines and rows, each of said light sensors being connected between a line and a row of said plurality of bus bars and each of said bus bars having a terminal at the edge face of said board; and a light source box including a plurality of lamps and a reflector for illuminating each of said sensors with uniform and parallel light beams.

3,943,338

ELECTRIC DEVICE FOR NUMERICAL MEASUREMENT OF A MAGNITUDE BY A PULSE COUNTER

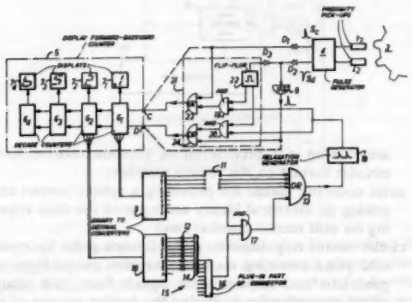
Claude Gagniere, Paris, France, assignor to Charbonnages de France, Paris, France

Filed Sept. 12, 1972, Ser. No. 288,397

Claims priority, application France, Sept. 14, 1971, 71.33067

Int. Cl.² G06M 3/14

U.S. Cl. 235—92 PL **5 Claims**



1. An electrical device for numerical measurement of a quantity by a pulse counter with a fixed whole number counting base, each pulse representing a rational fraction of the unit of measurement of the quantity comprising

a pulse counter including binary counting circuits,

means for supplying to said pulse counter a supplementary pulse every time said pulse counter stands at one of the numerals of a preselected series of numerals,

said pulse supplying means including

a pulse generator connected to the input circuit of said pulse counter,

a display comparator circuit controlling said pulse supplying means and connected to the output circuit of the pulse counter and including

binary-decimal coders each of which is associated with one of said binary counting circuits,

a decimal display system connected to outputs from said pulse counter,

an AND circuit whose output is connected to said pulse generator,

an OR circuit,

means for connecting outputs of said coder associated with the first of said counting circuits to said OR circuit,

said connecting means including

at least one AND circuit whose output is permanently connected to said OR circuit,

and means for connecting certain outputs of said coders to one of the inputs of each said AND circuit of said connecting means.

3,943,339

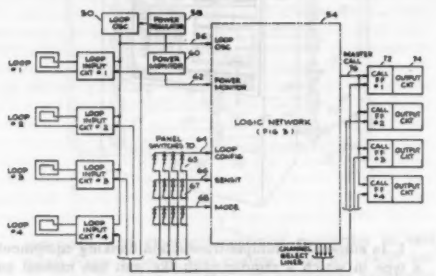
INDUCTIVE LOOP DETECTOR SYSTEM

Ralph J. Koerner; Milton G. Bienhoff; Martin C. Henderson, all of Canoga Park; John E. Higbee, Santa Susana, and Steve J. Koerner, Van Nuys, all of Calif., assignors to Canoga Controls Corporation, Canoga Park, Calif.

Filed Apr. 29, 1974, Ser. No. 465,031

Int. Cl.² G08G 1/065, 1/08

U.S. Cl. 235—92 TC **42 Claims**



1. Apparatus useful in conjunction with a plurality of wire loops each supported adjacent a different area of a roadway surface for detecting the presence of a vehicle on each of said areas, said apparatus comprising:

oscillator circuit means;

timing means defining a plurality of sequential phases;

switching means for coupling said oscillator circuit means to a different loop during each of said phases;

period measurement means for measuring the period of a defined number of cycles of said oscillator circuit means during each of said phases;

first digital storage means storing a plurality of reference numbers each corresponding to a different one of said phases;

a plurality of output devices; and

first means for comparing the relative magnitude of the period measured during each phase with the stored reference number corresponding to that phase for selectively supplying a call signal to a different one of said output devices during each phase.

3,943,340

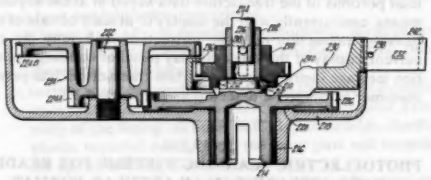
COMPUTER AUXILIARY GEAR BOX

Richard Seitz, Rockville, Conn., assignor to Veeder Industries, Inc., Hartford, Conn.

Filed Sept. 6, 1974, Ser. No. 503,614

Int. Cl.² G06C 15/42; B67D 5/22

U.S. Cl. 235—94 R **12 Claims**



1. For use with a mechanical fuel pump computer having a variator and a register wherein the variator has an input shaft normally driven by a fuel meter in accordance with the volume of fuel delivered and is settable to establish a selected unit volume fuel price and wherein the register has a resettable volume counter drivingly connected to the meter via the variator to reflect total volume of each fuel delivery and a resettable cost counter connected to be driven by the meter via the variator in accordance with its setting to provide a

price readout of the total cost of each fuel delivery, a converter usable for expanding the price range of the computer and for setting the computer to compute and register total volume and cost of each fuel delivery based on a price for a first unit volume and alternatively for another unit of reduced volume, the converter comprising a converter housing attachable to an underside of the variator, a meter driven rotary input and a rotary output, the rotary output including a variator drive gear, a selectively settable drive connection between the rotary input and the variator drive gear for driving the rotary output at a first drive ratio setting from the rotary input to the variator drive gear for computation and registration of fuel deliveries in preselected units of volume and alternatively at a second drive ratio setting for computation and registration of fuel deliveries in units of different volume from that established in said first setting, and an interlock movable from a first operating position to a second operating position to change the drive ratio from said first setting to said second setting, the interlock extending outside the housing in said first operating position, and means inside the housing engageable with the interlock in said second operating position to positively prevent return movement thereof to said first operating position.

3,943,341
COMPUTING APPARATUS

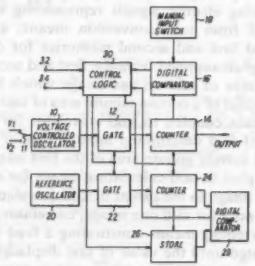
Gianfranco Corsi, and George Michael Watson, both of 8, Princesway, Team Valley, Gateshead, Durham, England

Filed Apr. 1, 1974, Ser. No. 456,897

Claims priority, application United Kingdom, Apr. 9, 1973, 16838/73

Int. Cl.² G06J 1/00

U.S. Cl. 235—150.52 **9 Claims**



1. Computing apparatus for providing a digital output proportional to the ratio of the magnitudes of two analogue input signals multiplied by a predetermined digital factor, comprising a pulse generator for receiving in turn each of the analogue input signals and for generating pulses at a frequency proportional to the magnitude of the input signal, a counter connected to the pulse generator for counting pulses generated thereby, timing means for measuring the time elapsed from the beginning of a counting operation of the counter, store means for storing the value of the elapsed time measured by the timing means when, during a first counting operation with one of the analogue signals supplied to the pulse generator, the count in the counter reaches a value equal to the predetermined digital factor, means for re-setting the counter, and means for providing an output equal to the count in the counter when, during the subsequent supply of the other analogue signal to the pulse generator, the time elapsed from the beginning of a further counting operation is equal to the value held in the store means.

3,943,342
COARSE AND FINE ELECTRONIC RAMP FUNCTION GENERATOR

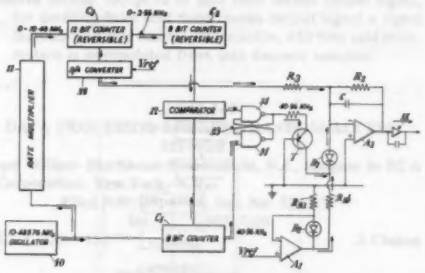
Colin Paul May, Marlow, and John Street, Henley-on-Thames, both of England, assignors to Instron Limited, High Wycombe, England

Filed July 18, 1974, Ser. No. 489,790

Claims priority, application United Kingdom, July 20, 1973, 34737/73

Int. Cl.² G06F 7/38

U.S. Cl. 235—150.53 **4 Claims**



1. An electronic ramp function generator having a resolution of $2^p = 2^q \times 2^r$ comprising:

a coarse digital function generator which provides a ramp consisting of 2^q equally spaced coarse steps all of equal height, and

a second and synchronized digital function generator which is connected to fill in each of the steps of the coarse ramp with 2^r finer steps,

said coarse function generator comprising a first counter pulsed by a high frequency oscillator, a second counter pulsed at a variable lower frequency, both counters having q bits, a comparator for comparing the counts in said two counters and arranged to emit a signal upon identity of the counts, a latch which is set each time said comparator provides a signal and reset each time said first counter returns to zero, and a modulator for converting the pulse train of varying mark/space ratio at the output of said latch to a voltage proportional to said mark/space ratio which varies in 2^q steps.

3,943,343
PROGRAM CONTROL SYSTEM FOR MANIPULATOR

Akiyoshi Irie, Himeji, Japan, assignor to Kawasaki Heavy Industries, Ltd., Japan

Filed July 3, 1974, Ser. No. 485,364

Claims priority, application Japan, July 9, 1973, 48-77305

Int. Cl.² G06F 15/46; B25J 9/00

U.S. Cl. 235—151.11 **5 Claims**

1. A program control system for controlling the motions of a manipulator assembly for tracing a prescribed path in space comprising

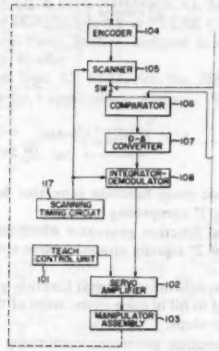
a. encoder means for generating position information representative of the coordinates of a plurality of specified points of said prescribed path in space which are spaced apart from each other solely by line segments of the same unit length,

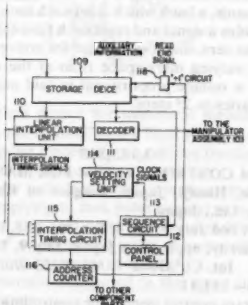
b. storage means connected to said encoder means for storing therein in addressable locations said specified position information representative of the coordinates of said plurality of specified points of said prescribed path which are spaced apart from each other by line segments of the same unit length,

c. means for receiving a pulsatory clock signal, address counter means responsive to said clock signal for periodically generating addresses of said storage means at regularly spaced intervals, said clock signal receiving means and address counter means comprising reader means for

reading from said storage means at a predetermined time interval the specified position information representative of the coordinates of the adjacent specified points as one set of the specified position information,

d. interpolation arithmetic means for sequentially providing the coordinates of N interpolation points as position command signals between said adjacent specified points by linear interpolation based upon said set of specified position information,





THE BLOCK DIAGRAM OF THE PROGRAM CONTROL SYSTEM IN ACCORDANCE WITH THE PRESENT INVENTION.

e. detecting means for sequentially comparing said position command signals with the signals representative of the actual or present position of said manipulator assembly and for generating a signal representing the difference between said two signals, and

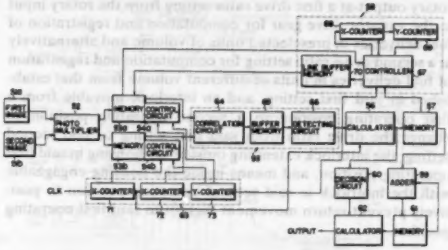
f. means for moving said manipulator assembly at a velocity corresponding to said signal representing the difference between said two signals so that the difference between said two signals may become zero.

3,943,344

APPARATUS FOR MEASURING THE ELEVATION OF A THREE-DIMENSIONAL FOREGROUND SUBJECT

Masatsugu Kidode, and Haruo Asada, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed June 26, 1974, Ser. No. 483,411
Claims priority, application Japan, June 30, 1973, 48-74204
Int. Cl.² H04N 1/04; G06F 7/00
U.S. Cl. 235—151.32 **4 Claims**



1. An apparatus for measuring the elevation of a three-dimensional foreground subject by first and second images photographed at two points of known height and having a distance therebetween, which comprises: photoelectric conversion means for generating electric signals representing said photographed first and second images each divided into a plurality of minute areas; a first memory coupled to said photoelectric conversion means for storing electric signals representing said first image supplied from said conversion means; a second memory coupled to said photoelectric conversion means for storing electric signals representing said second image supplied from said conversion means; a correlator coupled to said first and second memories for determining from output signals supplied from the first and second memories a minute area of said second image which has a shade most similar to that of a certain minute area of said first image; calculating means coupled to said correlator for calculating displacement of said determined minute area of the second image and said certain minute area of the first image; correcting means coupled to said calculating means for correcting a pattern of one image to the extent of said calculated displacement, said memory for said one image, correlator, calculating means and correcting means constituting a feed back circuit which is operated until the value of said displacement comes to have a prescribed level; adding means coupled to said calculating means for algebraicly summing all calculated displacements when operation of said feed back circuit is completed; and measuring means coupled to said adding means for measuring by said algebraic sum, said elevation of said three-dimensional foreground subject, said height of said two points and said distance therebetween.

3,943,345

DIGITAL ACCELERATION DETECTING SYSTEM

Noriyoshi Ando, Kariya, and Hiroaki Yamaguchi, Anjo, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed July 16, 1974, Ser. No. 488,938
Int. Cl.² B60T 8/12; G06F 15/20
U.S. Cl. 235—151.32 **5 Claims**

1. A digital acceleration detecting system comprising:

detecting means for generating pulse signals having a frequency corresponding to the speed of a rotating body to be detected;

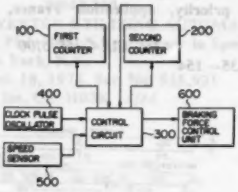
a first counter for counting said pulse signals from said detecting means during a predetermined period of time;

a second counter for counting said pulse signals during said predetermined period of time which begins at a time

different by a unit time from the time of the beginning of the counting by said first counter;

an oscillator for generating clock pulses of a constant frequency; and

control means for blocking the pulse signals from the detecting means after the elapse of both of the predetermined periods of said counters, for applying the clock

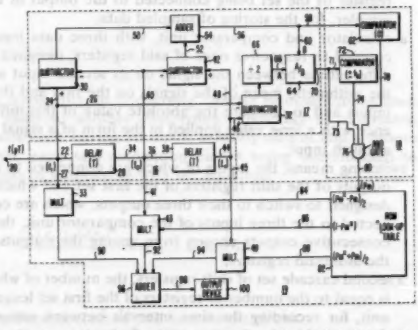


pulses from said oscillator to said counters simultaneously for continuing the counts accumulated by said counters during said predetermined periods of time, and for generating an output pulse with a duration from the time when the count of said first counter reaches a predetermined value until the time when the count of said second counter reaches a predetermined value.

3,943,346
DIGITAL INTERPOLATOR FOR REDUCING TIME QUANTIZATION ERRORS

Harry Urkowitz, Philadelphia, Pa.; Richard Prather Perry, Haddon Heights, and Leonard Weinberg, Haddonfield, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed July 22, 1974, Ser. No. 490,791
Int. Cl.² G06F *15/34, 7/38*
U.S. Cl. 235—152 **7 Claims**



1. A signal processor for extracting desired information from discrete sequential samples of a time-varying function, said information relating to extrema or durations of predetermined portions of said time-varying function, and being manifested in said time-varying function by a characteristic shape, comprising:

first means, receptive of data signals indicative of said sequential samples, for iteratively selecting consecutive groups of a predetermined number of said sequential samples and generating signals consecutively indicative of the respective values of such samples within each consecutive group of samples;

second means, receptive of said group signals, for collacating a predetermined continuous function in sequence to each respective consecutive group of samples, said predetermined function having a predetermined shape that approximates said characteristic shape in said time-varying function, said second means generating an output signal indicative of the instant of occurrence of indicia of said desired information in said predetermined function with respect to a given one of said samples within each of said groups;

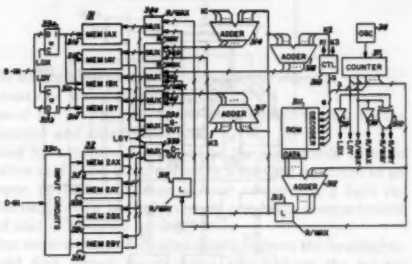
third means, receptive of said occurrence signal, for comparing said instant of occurrence to preset threshold values, and providing an output signal indicative of said occurrence only when said location is within said preset threshold values, ensuring thereby that the information manifested by a particular occurrence of said indicia is indicated in only one of said consecutive groups; and

fourth means, receptive of said third means output signal, for deriving from said third means output signal a signal indicative of said desired information, whereby said information is interpolated from said discrete samples.

3,943,347
DATA PROCESSOR REORDER RANDOM ACCESS MEMORY

Lloyd William Martinson, Haddonfield, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 27, 1974, Ser. No. 527,837
Int. Cl.² G06F *7/00*
U.S. Cl. 235—152 **3 Claims**



1. In a system for coupling output signals from a first processor to the input means of a second processor wherein the input signals to said second processor are represented by a different schema from the schema of the output signals from said first processor, the improvement comprising:

first memory means for storing the output signals from said first processor, said first memory means having data input means, data output means, and addressing means;

second memory means for storing signals specifying a first group of first memory addresses corresponding to the schema of input signals to said second processor, said second memory having addressing means and output means;

timing signal means for producing a pluraity of signals in time sequence representing successive binary numbers;

means for coupling said timing signals to the addressing means of said first memory means as a first address;

means for coupling a subset of said timing signals to the addressing means of said second memory means;

first adder means responsive to said output means of said second memory and to said timing signals for producing sum output signals;

means for coupling said sum output signals from said first adder means to the addressing means of said first memory means as a second address;

means responsive to said timing signals for storing data in said first memory means at one of said addresses and for retrieving data from said first memory means at the other of said addresses;

means for coupling the output signals from said first processor to the data input means of said first memory means; and

means for coupling the data output means from said first memory means to the input means of said second processor.

3,943,348

APPARATUS FOR MONITORING THE OPERATION OF A DATA PROCESSING COMMUNICATION SYSTEM

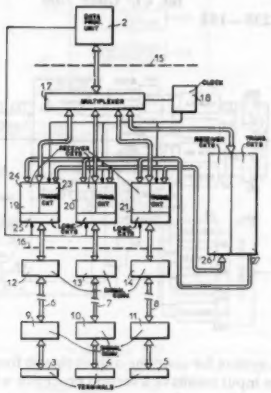
Jean Akriche, Margency, and André Molitor, La Varenne-St-Hilaire, both of France, assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed May 10, 1974, Ser. No. 468,964

Claims priority, application France, May 14, 1973, 73.17357

Int. Cl.² G06F *11/00*

U.S. Cl. 235—153 AK 6 Claims



1. An arrangement for maintaining communication apparatus coupled between a main station and a plurality of communication terminals by a plurality of communication lines, said communication apparatus including a plurality of communication means, each including a plurality of reception and transmission circuits and being operative to control transmission over a communication line coupled between said main station and one of said terminals, said arrangement comprising:

a. circuit means for transmitting checking signals, said circuit being connected to each of said reception circuits of said communication means;

b. circuit means connected to each of said transmission circuits of said communications means for receiving signals transmitted in response to said checking signals; and,

c. a logic circuit means coupled to each of said reception and transmission circuits of each of the communication means for enabling said communication means to be operatively coupled to a corresponding one of said lines, each of said logic circuit means being connected to said main station and conditioned by said main station so as to enable all said communications means to be disconnected in succession for reception and transmission of said checking signals.

3,943,349

METHOD AND DEVICE FOR RECORDING, IN REAL TIME, NON UNIFORMLY VARIABLE DATA WITH COMPRESSION OF DATA DURING PERIODS OF RELATIVELY SLOW VARIATION THEREOF

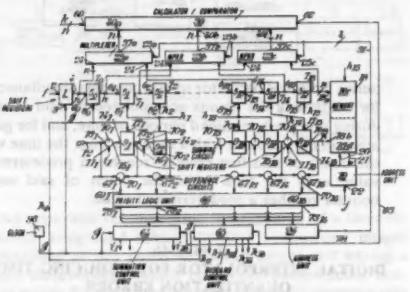
Patrice Abel; Pierre Duverne; Jean-Bernard Elziere, and Jerome Verchere de Reffye, all of Paris, France, assignors to Electricite de France, Paris, France

Filed May 28, 1974, Ser. No. 473,705

Claims priority, application France, May 29, 1973, 73.19565

Int. Cl.² G06F *5/00*

U.S. Cl. 235—154 9 Claims



2. A device for compressing data and recording the compressed data, characterized by the fact that it comprises, in combination:

a constant rate sampler for data in digital form;

a first cascade set of shift registers, the input of the first register of the set being connected to the output of the sampler, for the storing of sampled data;

a calculator and comparator unit, with three data inputs coupled to respective ones of said registers, designed to differentiate between the signal on its second input and the arithmetic mean of the signals on the first and third inputs and to compare the absolute value of this difference with a limit value applied in the form of a signal on a fourth input;

switching means, the inputs of which are connected to the outputs of the shift registers of the first set and which is designed to switch to their three outputs, which are connected to the three inputs of the comparator unit, three consecutive outputs chosen from among the outputs of the aforesaid registers;

a second cascade set of shift registers, the number of which is equal to the number of registers of the first set less one unit, for recording the time intervals between sampled data stored in the registers of the first set;

adder units to add one unit to the signal appled on its input, connected between the successive registers of the second set of registers as well as upstream the first register of this set;

subtractor units associated with each register of said second set of registers and each adder, for subtracting the value of the input of the adder unit preceding it from the value of the output of the associated register of the second stage set;

a logic unit, the inputs of which are connected to the outputs of the aforesaid subtractor units and which determines the three successive registers of the first stage the outputs of which will be connected through said switching means to the calculator and comparator unit;

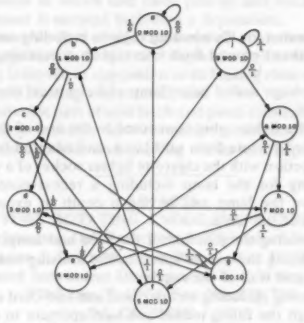
a control unit transmitting the decisions of the logic unit to the switching means, the registers of the first and second sets and the adder units; and

a storing or memory unit with one part, the input of which is connected to the output of the last register of the first set, and a second part, the input of which is connected to the output of the last register of the second set whereby each sampled data stored therein is identified as to its time occurrence.

3,943,350
RADIX CONVERTER UTILIZING AUTOMATA

Walter C. Lanning, Plainview, N.Y., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Oct. 18, 1974, Ser. No. 515,931
Int. Cl.[2] H03K 13/24
U.S. Cl. 235—155 6 Claims



1. Apparatus for converting number representations from one radix to another comprising a plurality of automaton circuits each having an input, a Mealy output and a Moore output, each said automaton circuit being instrumented to operate in accordance with the equation:

$$\frac{(S)\ r_a + I_a(r_a)^0}{r_b} = Z + S \ast \bmod r_b$$

where

S = Present state of said automaton circuit
S = Next state of said automaton circuit
r_a = Current radix of said number representation
r_b = Desired radix of said number representation
Z = Said Mealy output of said automaton circuit
$I_a(r_a)^0$ = Weighted input digit of said number representation
S_f = Final state of said automaton circuit,

said final state of said automaton circuit providing said Moore output representation of a digit of said number representation in said desired radix,

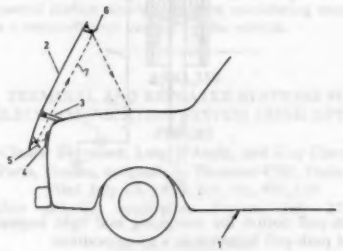
said automaton circuits being coupled in cascade with said input digits of said number representation being applied in serial fashion to the input of one of said automaton circuits and with the input of each of the remaining of said automaton circuits being coupled to the Mealy output of the preceding one of said automaton circuits,

each said automaton circuit comprising a device having r_b stable states.

3,943,351
LIGHTING ARRANGEMENT FOR A BODY COMPARTMENT IN THE FRONT PORTION OF A VEHICLE

Sten Erling Nilsson, Sjuntorp, Sweden, assignor to Saab-Scania AB, Sodertalje, Sweden

Filed July 3, 1974, Ser. No. 485,704
Claims priority, application Sweden, July 6, 1973, 7309545
Int. Cl.[2] B60Q 3/06
U.S. Cl. 240—7.1 R 4 Claims



1. In an automobile having body compartments,

at least one set of headlights,

a hood for closing one of the body compartments having interior and exterior surfaces,

means for attaching said hood to the automobile so as to allow said hood to be moved in a forward direction to an open position, the improvement comprising a light reflecting device for lighting said one body compartments of said automobile having

a first mirror means for reflecting light from the headlights, said first mirror means being attached on the inerior surface of said hood and positioned adjacent the forward portion of said hood,

a second mirror means for reflecting light from the headlights, said second mirror means being attached on the interior surface of said hood and positioned adjacent the back portion of said hood so as to be in the path of light reflected by the first mirror means,

said first and said second mirror means being aligned so that the light beam from the headlights is intercepted and reflected by said first mirror means along the interior of said hood when said hood is in an open position to said second mirror means and thereafter from said second mirror means into said body compartment.

3,943,352
LUMINOUS SAFETY DEVICE FOR DOORS OF VEHICLES

Guillermo Peña May, Manuel Gonzales 114 - A Unidad Tlatelolco, Mexico City, Mexico

Filed Oct. 29, 1974, Ser. No. 518,323
Claims priority, application Mexico, June 26, 1974, 152152
Int. Cl.[2] B60Q 1/00
U.S. Cl. 240—7.1 R 7 Claims

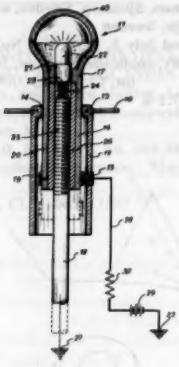
1. A luminous safety device for vehicle doors comprising:

an orifice in the door of the vehicle,

an acuating rod having one end attached to the safety lock mechanism and having the other end threaded,

a push-pull button connected to the said threaded end of the said rod with a head portion having translucent walls and a sleeve portion which engages the threaded portion of the said rod and passes through the said orifice in said vehicle door,

an electric circuit comprising a light source for illuminating said push-pull button, and switch means actuated by said



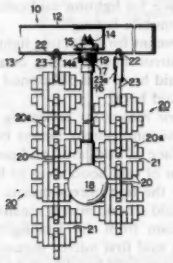
push-pull button for energizing said light source when said push-pull button is in a given position.

3,943,353

DISASSEMBLABLE DECORATIVE LIGHT FIXTURE

Minami Tada, No. 9-11, Kugayama 4-chome, Suginami, Tokyo, Japan

Filed May 23, 1974, Ser. No. 472,541
Int. Cl.² F21P *1/02*; F21S *1/06*
U.S. Cl. 240—10 R 9 Claims



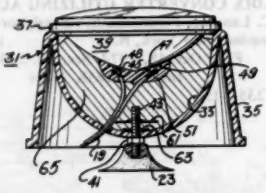
1. A decorative light fixture comprising:
a flat base structure of a rigid material;
a socket means securely mounted on and accessible from beneath said base structure;
an elongated lamp support member having mounted at the upper end thereof a plug member for electrical connection with said socket means the lower end of the lamp support member being adapted to receive an electric lamp;
means for detachably holding said upper end of said lamp support member securely with respect to said socket means and base structure;
a plurality of decorative C-shaped elements loosely and removably linked directly one to another to form a flexible strand the length of which is determined by the number of said elements therein, there being provided a plurality of said strands of chained decorative elements; and
a plurality of hook members mounted on the undersurface of said base structure, each said hook member including means for releasably supporting one of said strands of linked decorative elements in a vertical plane.

3,943,354

MULTIPLE PURPOSE LOW VOLTAGE SEALED BEAM LAMP

Kathleen T. Neal, York, Pa., assignor to Penguin Pools, Inc., York, Pa.

Filed Aug. 9, 1974, Ser. No. 459,296
Int. Cl.² F21V *31/00*
U.S. Cl. 240—26 2 Claims



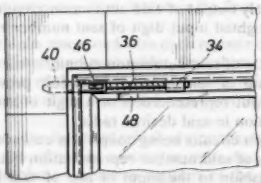
1. Apparatus for illuminating regions including underwater regions without ground fault interrupters comprising in combination,
a low-voltage sealed beam lamp and electrical cord combination;
a cigarette lighter plug connected to the end of the electrical cord remote from said lamp, and adapted for plug-in connection with the cigarette lighter socket of a vehicle;
a housing for the lamp including a recess contoured to receive the lamp and having a depth in excess of the depth of the lamp;
means sealing the junction of the cord and lamp;
means filling the excess space in the housing between the lamp and wall of the recess;
said housing including an aperture, and said cord extending through the filling means and said aperture to exit from the housing;
a threaded stud;
a threaded fastener carried by the stud;
a washer carried by the stud in spaced relation to the fastener;
said fastener, washer and a portion of the stud being embedded in the filling means with the stud other than said portion extending outwardly of the filling means and penetrating the recess wall and extended therebeyond; and,
a suction cup carried by the extending end of the stud.

3,943,355

LUMINAIRE LATCH AND HINGE

Jack W. Lundy, Houston, Tex., assignor to Esquire, Inc., New York, N.Y.

Filed Oct. 17, 1974, Ser. No. 515,596
Int. Cl.² F21V *17/00*
U.S. Cl. 240—147 1 Claim



1. A luminaire adapted to be supported above an area to be lighted and having a hinged access panel that is capable of being removed and is also capable of pivotal movement to an

open position allowing personnel to gain access to the interior of the housing, comprising

a housing having an opening on one side thereof for receiving a pivotally movable and removable panel,

a movable and removable panel having an elongate recess defined on at least one side thereof,

at least one spring-loaded latch and pivot element positioned with said recess, said latch and pivot element having a fixed part thereof being secured to said panel adjacent said recess, said latch also having a movable part thereof being urged to project from an end of said recess,

said housing being formed to define a hole for receiving the movable part of said latch and pivot element,

said latch and pivot element being substantially flush with said panel and accessible for operating as an external latch for securing said panel to said housing, being movable to an unlatching position to render said panel removable and when in engagement with said hole, serving as a pivot to retain said panel in pivotal relation with said housing,

said panel to which said fixed part of said latch and pivot element is secured including a depression,

said movable part of said latch and pivot element including a projection to fit into said depression when said movable part is moved in opposition to its biasing clear of said hole in said housing and rotated, and

said movable part of said latch and pivot element being both linearly movable and rotatable to accomplish locking within said hole and latching within said depression.

3,943,356

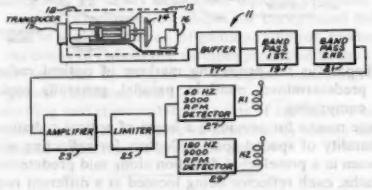
X-RAY TUBE ROTATING ANODE SENSING DETECTOR

Joel J. Schmutzer, Oak Park; John I. Klusendorf, Schaumberg, and James J. Grichnik, Park Ridge, all of Ill., assignors to Advanced Instrument Development, Inc., Melrose Park, Ill.

Filed Dec. 5, 1974, Ser. No. 529,734

Int. Cl.² H05G 1/70

U.S. Cl. 250—406 **10 Claims**



1. A system for sensing the rotational speed of the rotatable anode of an X-ray tube, comprising, in combination, means for sensing the vibrations of the rotating anode, means for converting said vibrations into alternating current signals of different frequencies, means for selecting signals at a frequency responsive to a vibration depicting a given rotational speed of the anode, and means for providing an output indicative of the selected frequency and thereby of the given rotational speed of the anode.

3,943,357

REMOTE CONTROLLED VEHICLE SYSTEMS

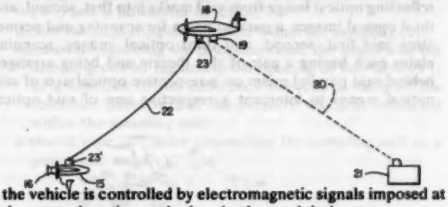
William Howard Culver, 2841 Chesapeake St., NW., Washington, D.C. 20008

Filed Aug. 31, 1973, Ser. No. 393,468

Int. Cl.² H04B 9/00

U.S. Cl. 250—199 **17 Claims**

1. A communication system for the remote control of a vehicle, control mechanism carried by the vehicle to be controlled, a control station, means for generating electromagnetic control signals at said control station, means for generating intelligence bearing signals at the vehicle, means for modulating a beam of light receivable at the control station by said intelligence bearing signals generated at the vehicle wherein



the vehicle is controlled by electromagnetic signals imposed at the control station and wherein the modulating means comprises a retroreflector carried by the vehicle.

3,943,358

TERMINAL AND REPEATER STATIONS FOR TELECOMMUNICATION SYSTEM USING OPTICAL FIBERS

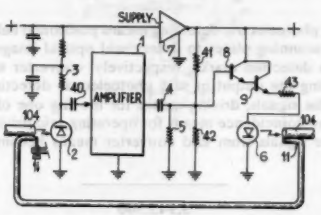
Jean-Claude Reymond; Luigi d'Auria, and Guy Chevallier, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed July 23, 1974, Ser. No. 491,129

Claims priority, application France, July 27, 1973, 73.27573

Int. Cl.² H04B 9/00

U.S. Cl. 250—199 **2 Claims**



1. An optical fiber telecommunication system comprising a transmitting station, at least one repeating station, and a receiving station, optical fibers for interconnecting said stations and propagating light energy carrying an electric signal respectively transmitted, repeated and received by said stations; each repeating station having an input, a photodiode connected to said electric input for detecting said signal, an amplifier having an input connected to said photodiode for amplifying said electric signal and an output, an electroluminescent diode connected to said amplifier output for transmitting amplified light energy modulated by said electric signal, and optical fiber means coupled to said electroluminescent diode for taking a portion of said amplified light energy and for transmitting said portion backward to said input photodiode of one of said repeating stations disposed between said receiving station and said transmitting station.

3,943,359

APPARATUS FOR RELATIVELY POSITIONING A PLURALITY OF OBJECTS BY THE USE OF A SCANNING OPTOELECTRIC MICROSCOPE

Yoshio Matsumoto, and Keiichi Okamoto, both of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

Filed June 17, 1974, Ser. No. 480,242

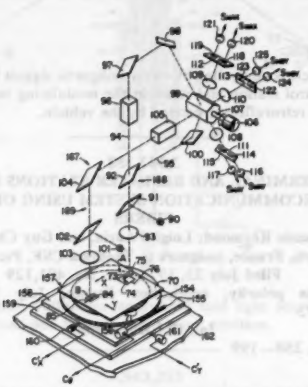
Claims priority, application Japan, June 15, 1973, 48-66880; June 15, 1973, 48-66881

Int. Cl.² G01J 1/20

U.S. Cl. 250—201 **10 Claims**

1. An apparatus for relatively positioning two objects each having marks for position detection formed thereon at least at two spaced regions of the respective objects, comprising opti-

cal means for detecting said marks on said objects including at least first and second optical system means for dividing a reflecting optical image from said marks into first, second, and third optical images, a parallel prism for scanning and permeating said first, second, and third optical images, scanning plates each having a pair of slits therein and being arranged behind said parallel prism on a respective optical axis of said optical means to intercept a respective one of said optical



images, photoelectric detecting means positioned behind each of said scanning plates to detect said optical images of said position detection marks, respectively, converter means for converting the output of said photoelectric detecting means into pulse signals, driving means for moving one of said objects, and coincidence means for operating said driving means until the signals from said converter means become coincident.

3,943,360

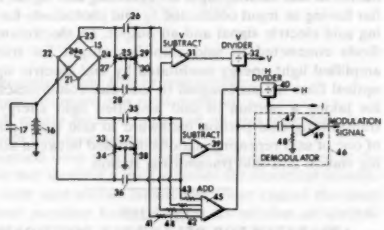
RADIANT ENERGY PULSE DETECTER

William J. Parkin, Wayland, Mass., assignor to Sanders Associates, Inc., South Nashua, N.H.

Continuation of Ser. No. 453,804, May 6, 1965, abandoned. This application Aug. 12, 1968, Ser. No. 753,844

Int. Cl.[2] H01J 39/12

U.S. Cl. 250—210 **4 Claims**



1. Apparatus for detecting the position of radiant energy emitted in pulses by a remote target comprising

a single radiation responsive variable impedance detector element having a first impedance region which is variable with respect to a second impedance region,

direct current biasing means coupled to said detector element for providing an axis defining bias signal current through each of said impedance regions,

a load coupled in parallel with said detector element, having a first load impedance element coupled in series with said first impedance region and said biasing means, and having a second load impedance element coupled in series with said second impedance region and said biasing means,

said biasing means providing a first bias signal current from said biasing means through said first impedance region and said first load impedance element back to said biasing means, and a second bias signal current from said biasing means through said second impedance region and said second load impedance element opposing said first bias signal current back to said biasing means,

differential output means coupled to said detector element for providing a position output signal derived from a change in said bias signal currents due to a change in impedance of one of said first and second impedance regions upon the impingement thereon of at least one pulse of radiant energy,

summing means coupled in parallel to said detector element for providing a signal representative of the intensity of said radiant energy pulse, and

means coupled to said differential output means and said summing means for dividing said position output signal by said intensity signal.

3,943,361

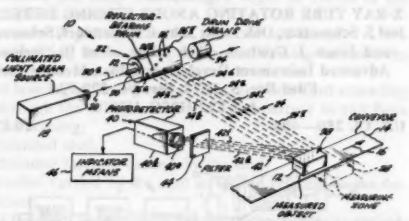
DIMENSIONAL MEASUREMENT OF REMOTE OBJECTS USING PROJECTED LIGHT RASTER

Carl T. Miller, Tigard, Oreg., assignor to Oregon Graduate Center for Study and Research, Beaverton, Oreg.

Filed Aug. 7, 1974, Ser. No. 495,326

Int. Cl.[2] H01J 3/14

U.S. Cl. 250—236 **7 Claims**



1. Apparatus for projecting markers of optical radiation along predetermined, multiple, parallel, generally coplanar paths, comprising

source means for providing a beam of optical radiation,

a plurality of spaced-apart reflectors for reflecting such a beam in a preselected direction along said predetermined paths, each reflector being located at a different respective distance from said source means, and

rotary means operatively connected to said reflectors, operable with rotation on its axis to move the reflectors, one at a time, in a predetermined sequence along different arcuate paths which intersect said beam.

3,943,362

SIMULTANEOUS OXYGEN AND SILICON NEUTRON ACTIVATION WELL LOG USING PULSED NEUTRON SOURCE

Harold E. Peelman, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Jan. 18, 1974, Ser. No. 435,133

Int. Cl.[2] G01V 5/00

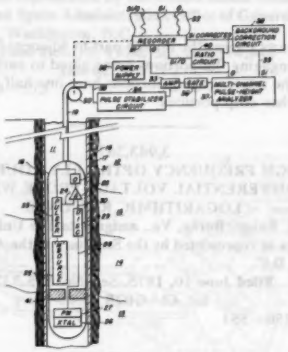
U.S. Cl. 250—256 **14 Claims**

1. A method for determining simultaneously the oxygen and silicon content of earth formations in the vicinity of a well borehole, comprising the steps of:

passing a pulsed source of fast neutrons through a well borehole and repetitively irradiating earth formations in the vicinity of the borehole with bursts of fast neutrons of energy sufficient to cause the nuclear reaction $O^{16}(N,P)N^{16}$;

detecting radiation occurring from the decay of unstable radioactive isotopes of elements in the vicinity of the borehole created by the capture of neutrons from said repetitive bursts of fast neutrons and generating voltage signals representative of the energy of said detected radiation;

separating, according to a predetermined energy relationship, said detected radiations into at least two energy components corresponding to the decay of radioactive isotopes produced by the capture of neutrons by the elements silicon and oxygen and making counts representative thereof;



correcting said representative counts of the radiation produced by the decay of unstable isotopes produced by the capture of neutrons by silicon for background radiation due to the degradation of gamma radiation produced by the decay of radioactive isotopes produced by the capture of neutrons by oxygen by Compton scattering of said gamma radiation; and

recording said representative counts of radioactive isotopes produced by the capture of neutrons by silicon and oxygen as a function of borehole depth.

3,943,363

DEVICE FOR AUTOMATIC ANALYSIS MASS SPECTROMETRY

Jean-Claude Ambiard, Vienne, France, assignor to Entreprise de Recherches et D'Activities Petrolieres Elf, Paris, France

Filed Sept. 17, 1974, Ser. No. 506,730

Claims priority, application France, Sept. 25, 1973, 73.34263

Int. Cl.[2] G01N *27/62;* H01J *39/34*

U.S. Cl. 250—288 **23 Claims**

1. A device for the automatic analysis by mass spectrometry of polyphase mixtures which circulate continuously within main pipes, wherein said device comprises:

pipes constituting a plurality of primary loops (B_i), each of said primary loops (B_i) being connected to one of the main pipes and fitted with a flow regulating valve and a flowmeter in series;

pipes (T_i), each of said pipes (T_i) being such as to connect a branch point in a primary loop (B_i) to a pneumatic valve (V_j) through the intermediary of a dust filter (F_i) and a needle valve for regulating the flow rate;

pneumatic valves (V_j) for operably connecting one of the pipes (T_i) to a pipe (T');

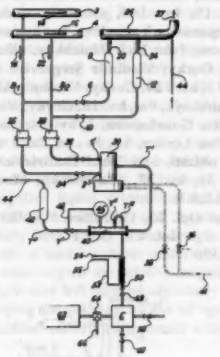
a sampling cell at the extremity of the pipe (T');

a sampling pipe (T'') for connecting one outlet of the sampling cell to a recycling circuit through a delivery valve (V') and a flowmeter in series;

means for measuring the pressure within the sampling cell;

means for regulating the pressure within the interior of the sampling cell by regulating the opening of the valve (V') as a function of the difference between a value of the reference pressure and the pressure which is measured within the sampling cell;

a traced pipe (T''') for connecting the sampling cell to a pneumatic valve (V'');



a capillary tube for connecting the pneumatic valve (V'') to a chamber (E);

pumping means for creating a vacuum within the chamber (E);

a pipe for connecting the chamber (E) to the ionization chamber of a mass spectrometer;

electronic means for simultaneously initiating the application of voltage to the accelerating electrodes of the mass spectrometer and the opening of the pneumatic valve (V'');

means for initiating the opening of the pneumatic valves (V_j) according to the mixture to be analyzed.

3,943,364

DETERMINING HOMOGENEITY OF CLINICAL CONTROLS

Allan L. Louderback, Temple City, and Anthony J. Fontana, Glendora, both of Calif., assignors to Baxter Laboratories, Inc., Deerfield, Ill.

Filed Aug. 14, 1974, Ser. No. 497,420

Int. Cl.[2] G01T *1/161*

U.S. Cl. 250—303 **3 Claims**

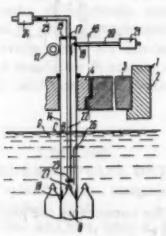
1. A method of determining homogeneity of clinical control serum comprising adding batchwise to the bulk control serum a radioactive tracer having a halflife of from about 4 days to about 15 days, filling standard containers with the control serum containing the radioactive tracer, analyzing said filled standard containers in a radiation counter to determine the amount of radioactivity present in said containers and comparing the inter-container differences in said radioactivity.

3,943,365

METHOD OF DETECTING STACKS WITH LEAKY FUEL ELEMENTS IN LIQUID-METAL-COOLED REACTOR AND APPARATUS FOR EFFECTING SAME

Nikolai Nikolaevich Aristarkhov; Igor Alexandrovich Efimov, both of prospekt Lenina, 24, kv. 30, Obninsk, Kaluzhskoi oblasti; Boris Ivanovich Zaitsev, ulitsa Shalyapina, 15, kv. 131, Gorky; Iskra Genrikhovna Peters, ulitsa Maximova, 6, kv. 78, Moscow; Boris Severianovich Tymosh, prospekt Lenina, 13/1, kv. 25, Obninsk, Kaluzhskoi oblasti; Viktor Sergeevich Filonov, ulitsa Raspletina, 1, kv. 19, Moscow; Alexei Lavrentievich Sharov, Tramvainy proezd, 17, korpus 1, kv. 133, Moscow; Alexei Ivanovich Shildin, ulitsa Pravdy, 3/1, kv. 36, Moscow; Galina Stepanovna Balashova, ulitsa Demyana Bednogo, 1, korpus 6, kv. 27, Moscow; Nikolai Ivanovich Bets, prospekt Lenina, 29, kv. 56, Obninsk, Kaluzhskoi oblasti; Stanislav Alexandrovich Skvortsov, ulitsa Kurchatova, 19, kv. 104, Obninsk, Kaluzhskoi oblasti; Valentina Stepanovna Yakovleva, Leningradskoe shosse, 88, kv. 94, Moscow; Ivan Ilich Zhuchkov, ulitsa 22 Partsezda, 6/2, kv. 60., Gorky; Vladimir Sergeevich Gorjunov, ulitsa Shalyapina, 15, kv. 124, Gorky; Vladimir Alexeevich Petrov, ulitsa Zhitomirskaya, 9-a, kv. 18, Gorky; Vladimir Petrovich Kevrolev, ulitsa Goncharova, 3, kv. 34; Valery Nikolaevich Rybakov, ulitsa Lenina, 10, kv. 61, both of Dimitrovgrad, Ulyanovskoi oblasti, and Ninel Dmitrievich Tverdovsky, 1 Mikroraion, 31, kv. 37, Shevchenko, Mangyshlakskoi oblasti, all of U.S.S.R.

Filed Oct. 23, 1973, Ser. No. 408,934
Int. Cl.[2] G01T *3/00*
U.S. Cl. 250—390 10 Claims



1. A method of detecting stacks with leaky fuel elements in a liquid-metal-cooled reactor, consisting in consecutive checking of said stacks with said fuel elements by accumulating gas in the coolant of said fuel element stack being checked with the reactor being shut down, separating a sample of said coolant from the coolant in said fuel element stack being checked, separating said gases from said sample by means of an inert carrier gas, and measuring the radioactivity of said separated gases.

3,943,366

COLLIMATOR FOR A RAY DIAGNOSING DEVICE

Winfried Platz, Ratsberg, and Karl-Georg Heinzelmann, Uttenreuth, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jan. 12, 1973, Ser. No. 323,318
Claims priority, application Germany, Jan. 13, 1972, 2201417
Int. Cl.[2] H01J *35/16*
U.S. Cl. 250—505 3 Claims

1. A collimator for a ray diagnosing device, comprising a body having walls which absorbe the rays, said walls consisting of a plurality of strips which extend parallel to each other, each of said strips having a series of uniform and uniformly spaced outwardly extending portions and uniform flat portions between said outwardly extending portions, the flat portions of two adjacent strips engaging each other, the outwardly extending portions of two adjacent strips extending in opposite directions, whereby the strips form a series of parallel holes, wherein each outwardly extending portion consists of a middle part extending parallel to the flat portions and two

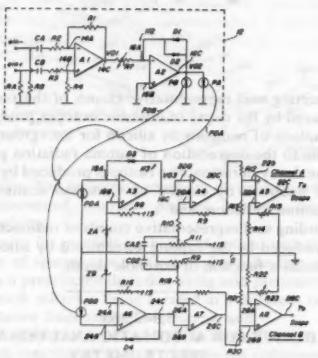
inclined parts joining the middle part to adjacent flat portions, the interengaging flat portions being glued to each other, and wherein the interengaging portions have one half of the thickness of other strip portions.

3,943,367

HIGH FREQUENCY OPTICALLY COUPLED DIFFERENTIAL VOLTAGE PROBE WITH LOGARITHMIC RESPONSE

George H. Baker, Burke, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 10, 1975, Ser. No. 585,737
Int. Cl.[2] G02B *27/00*
U.S. Cl. 250—551 8 Claims



1. Differential voltage probe means comprising:
a probe module having positive and negative voltages input terminals, differential amplifier and driver circuit means providing voltage output signals as a function of the logarithm of the voltage differences at said input terminals, and first and second light emitting means selectively driven by said circuit means as function of the relative magnitudes of the respective voltages at said input terminals and providing first and second light outputs of intensities proportional to the said voltage differences;
a dual channel amplifier means comprising first and second photodetector means responsive to the light outputs of said first and second light emitting means, respectively, each photodetector means serving as an input sensor for a respective one of said channels and providing first and second current inputs, respectively, proportional to said first and second light outputs, and first and second current-to-voltage and buffer circuit means comprising said dual channels energized in respective response to said first and second light emitting means for providing output

signals proportional to the said voltage differences sensed by said probe module; and

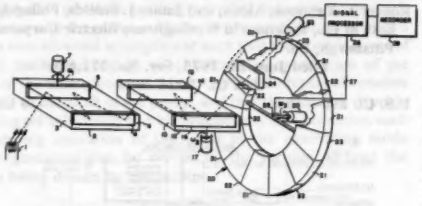
optical coupling means connecting said first and second light outputs of said first and second light emitting means to said first and second photodetector means, respectively.

3,943,368

METHOD AND APPARATUS FOR COMPENSATING REFLECTION LOSSES IN A PATH LENGTH MODULATED ABSORPTION-ABSORPTION TRACE GAS DETECTOR

John Dimeff, San Jose, Calif., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Filed Oct. 15, 1974, Ser. No. 514,546
Int. Cl.² G01N 21/26
U.S. Cl. 250—573 11 Claims



1. A modulated optical path length analyzing apparatus comprising:

means forming a first chamber for containing a reference gas at a predetermined density;

means forming a second chamber for containing a sample of said reference gas at an unknown density;

a source of radiant energy;

said chambers each having an entrance and exit wall that is transparent to said radiant energy;

said first chamber being arranged between said radiant energy source and said second chamber so that radiant energy from said radiant energy source passes through said entrance and exit walls of said first chamber before it passes through said entrance and exit walls of said second chamber;

means for modulating the length of the path of said radiant energy in said first and said second chambers at a first and a second frequency, respectively;

chopper means including a first cell for containing a first gas including an optically thick sample of said reference gas sufficient to absorb all of the radiant energy emerging after passage through said first and said second chambers in the spectral regions normally affected by said reference gas and a second cell for containing a second gas excluding said reference gas;

means for periodically positioning said first and said second chopper cells in the path of said radiant energy emerging after passage through said first and said second chambers; and

means responsive to the radiant energy emerging from said chopper cells and the position and said chopper cells with respect to said radiant energy path for generating a signal proportional to the density of said reference gas in said second chamber.

3,943,369

LIQUID CRYSTALLINE INFORMATION TRANSFER

Franklin D. Saeva, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 29, 1974, Ser. No. 465,051
Int. Cl.² G01F 1/13
U.S. Cl. 250—568 10 Claims

1. A method for transferring information, comprising:

a. providing a layer of optically negative liquid crystalline material in contact with an insoluble material; said insoluble material becoming extrinsically optically active, and having an absorption band within which circular dichroism is induced, by said contact with said optically negative liquid crystalline material;

b. directing at least one right-handed circularly polarized light pulse and at least one left-handed circularly polarized light pulse upon a point of interest of said layer of optically negative liquid crystalline material in contact with said insoluble material, said light pulses being of equal intensity and having a wavelength within the absorption band of said insoluble material; and

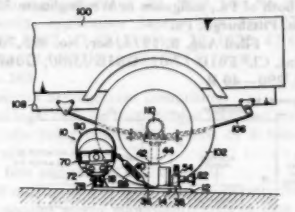
c. converting into a signal the relative magnitudes of said at least one right and left-handed circularly polarized light pulses emerging through said layer of optically negative liquid crystalline material in contact with said insoluble material.

3,943,370

FRICTION-DRIVE ELECTRICITY GENERATING METHOD AND EQUIPMENT UTILIZING THE DRIVING WHEEL OF MOTOR CARS

Tsuguhiko Watanabe, No. 5-13, 1-chome, Ebara-cho, Nakano, Tokyo, Japan

Filed Aug. 22, 1974, Ser. No. 499,483
Claims priority, application Japan, Mar. 1, 1974, 49-23443; May 16, 1974, 49-54998
Int. Cl.² H02P 9/04
U.S. Cl. 290—1 R 8 Claims



1. A method of generating electricity utilizing a driven wheel of a motor vehicle, comprising the steps of raising a driven wheel of a motor vehicle out of ground contact; pivotally mounting a generator adjacent the periphery of said driven wheel; letting the generator tilt so that a drive shaft of the generator rests against the periphery of said driven wheel and maintaining the drive shaft in contact with periphery so that the wheel rotates the drive shaft to cause the generator to produce electricity while the transmission of frictional forces to said wheel due to the generation of electricity is maintained at a minimum.

3,943,371

GAS TURBINE POWER PLANT CONTROL APPARATUS INCLUDING AUTOMATIC LOAD PICKUP

Robert A. Yannone, Aldan, and James J. Shields, Philadelphia, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 20, 1973, Ser. No. 371,621

Int. Cl.² F01D *17/02*; **G05B** *15/00*; **G06F** *15/06*

U.S. Cl. 290—40 B **23 Claims**

1. A gas turbine electric power plant comprising:

a. a gas turbine having compressor, combustion and turbine elements;

b. a generator coupled to said gas turbine for drive power;

c. a generator breaker for coupling said generator to a power system;

d. a fuel system for supplying fuel to said gas turbine combustion element;

e. means for operating said fuel system so as to control said supplied fuel; and

f. a control system which produces a control signal for controlling said fuel system operating means, including means for automatically changing said control signal at generator breaker closing to provide for an immediate pickup of load by said generator wherein said automatic changing means produces a control signal having a step change at generator breaker dosing, and said step change causes a step change in said supplied fuel said control system further including a plurality of control paths, said control paths including at least a speed control path for generating a speed control signal and a load control path for generating a load control signal, and means for selecting said control signal from among said control path signals wherein said speed control path is adapted to start speed signal rising before generator breaker closing, said load control path is adapted to start said load signal rising upon generator breaker closing at a level substantially the same as said speed signal at such closing, and said load signal increases at a slower rate than said speed signal after generator breaker closing, such that said speed signal normally is the selected control signal before generator breaker closing and said load signal normally is the selected control signal only after generator breaker closing.

3,943,372

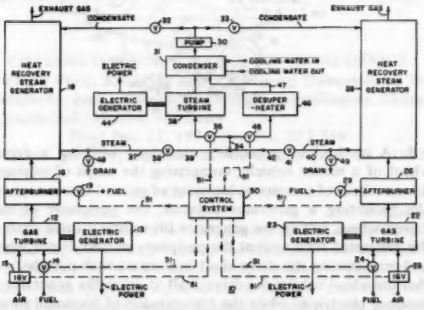
COMBINED CYCLE ELECTRIC POWER PLANT AND A GAS TURBINE HAVING AN IMPROVED STARTUP CONTROL ESPECIALLY USEFUL IN A BACKUP CONTROL SYSTEM

Jack R. Smith, Pittsburgh, and Terry J. Reed, North Huntingdon, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 8, 1974, Ser. No. 495,700

Int. Cl.² F01D *17/02*; **G05B** *15/00*; **G06F** *15/06*

U.S. Cl. 290—40 R **10 Claims**



1. A combined cycle electric power plant comprising at least one gas turbine, means for generating steam in response to heat energy from said gas turbine, a steam turbine driven by steam supplied to it from said steam generating means, means for generating electric power under the driving power of said turbines, means for controlling the operation of said turbines and said steam generating means, said controlling means including a gas turbine control system having an automatic control and a backup control, said gas turbine control system including means for controlling the flow of fuel to said gas turbine under automatic and backup control, means for transferring between said automatic and backup controls under predetermined conditions, said backup control including means for manually raising and lowering a fuel demand signal applied to said fuel control means at least to control gas turbine load during the load mode of operation, means for limiting the operation of said fuel flow controlling means to limit the turbine outlet gas temperature, and circuit means for generating a feed-forward startup signal which increases as a function of time and which is applied to said fuel flow controlling means to provide for turbine acceleration normally without operation of said temperature limiting means to a speed at which synchronization control is to occur.

3,943,373

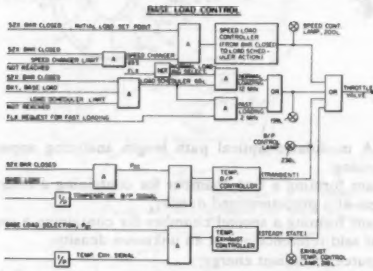
GAS TURBINE POWER PLANT CONTROL APPARATUS INCLUDING A SPEED/LOAD HOLD AND LOCK SYSTEM

Robert A. Yannone, Aldan, and James J. Shields, Philadelphia, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 20, 1973, Ser. No. 371,626

Int. Cl.² F02C *9/04*

U.S. Cl. 290—40 R **20 Claims**



1. A gas turbine electric power plant including a gas turbine having compressor, combustion and turbine elements, a generator coupled to said gas turbine for drive power, a generator breaker for coupling said generator to a power system so as to provide means for delivering power to the power system, a fuel system for supplying fuel to said gas turbine combustion element including control means for regulating the fuel flow as a function of a fuel scheduling control signal developed thereby, and a fuel scheduling control system for controlling the load accepted by said turbine, said fuel scheduling control system comprising:

a. a first means for accepting turbine load at breaker closing of a predetermined minimum level;

b. second means for automatically raising accepted turbine load from said minimum level to, and maintaining it at, one of a plurality of temperature limited turbine load levels, upon selection of one of said turbine load levels;

c. third means for changing accepted turbine load from one of said temperature limited turbine load levels to another; and

d. fourth means for interrupting changes in accepted turbine load and holding it at any available level, said first, second, third and fourth means being all cooperatively coupled to said fuel system and adapted to commensurately modify said fuel scheduling control signal devel-

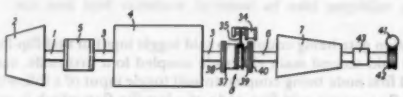
oped thereby in accordance with the turbine load to be accepted.

3,943,374

ELECTRICAL POWER GENERATING PLANT

Herbert Arthur Clements, Weybridge, England, assignor to S.S.S. Patents Limited, London, England

Filed Aug. 5, 1974, Ser. No. 494,882
Claims priority, application United Kingdom, Aug. 10, 1973, 38092/73
Int. Cl.² F01D 15/10
U.S. Cl. 290—52 4 Claims



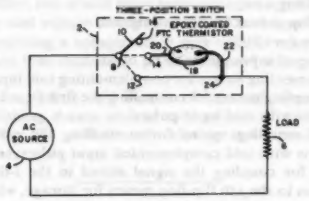
1. Electrical power generating plant of the type comprising a unidirectional turbine, a unidirectional motor/generator and a unidirectional pump, wherein a synchronous clutch having coacting sets of clutch teeth is provided between the motor/generator and the pump, with the improvement that the clutch is in a non-inverted arrangement such that the coacting sets of clutch teeth interengage automatically upon rotation of the shaft of the motor/generator in its normal direction of rotation relative to the shaft of the pump, and that the clutch is capable of being set selectively to a bi-directionally free condition such that during operation of the plant in the generating mode motor/generator can be driven by the turbine without the pump being driven by the turbine.

3,943,375

ON-OFF SWITCH WITH TIME DELAY

David V. Williamson, Danvers, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed Dec. 23, 1974, Ser. No. 535,463
Int. Cl.² H01H 7/00
U.S. Cl. 307—141 8 Claims



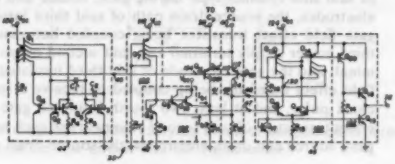
1. A switch for an electrical circuit, said switch comprising: a common terminal adapted for connection to said circuit; selective switching means connected to said common terminal; at least first and second position contacts for selective engagement by said switching means, said first position contact being adapted for connecting to said circuit whereby upon engagement by said switching means a closed-circuit on condition can be provided; and a positive-temperature-coefficient thermistor connected between said second and first position contacts whereby, upon connection of said switch in said circuit and engagement of said second position contact by said switching means, said thermistor is series connected with said switch in said circuit; said thermistor being selected to delay deenergization of said circuit for a predetermined period of time upon actuation of said switching means from said first to said second position contact whereby a time delayed off function is provided.

3,943,376

OCCUPANCY DETECTOR APPARATUS FOR AUTOMOTIVE SAFETY SYSTEMS

David K. Long, Sunnyvale, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Division of Ser. No. 408,681, Oct. 23, 1973, Pat. No. 3,898,472. This application Jan. 27, 1975, Ser. No. 544,444
Int. Cl.² B62D 45/00
U.S. Cl. 307—116 5 Claims



1. Occupant presence detecting means comprising:
means forming an occupant sensing capacitor having a first capacitance in the presence of an occupant and a second capacitance in the absence of an occupant;
means forming a reference capacitor having a capacitance independent of the presence or absence of an occupant;
means for supplying charging current to said sensing capacitor and said reference capacitor;
first, second and third terminals;
charge detecting means responsive to a first signal applied to said first terminal and operative to simultaneously develop second signal at said second terminal which is commensurate with the capacitance of said occupant sensing capacitor and a third signal at said third terminal which is commensurate with the capacitance of said reference capacitor; and
comparator means responsive to said second and third signals and operative to develop an output signal having a first state when the capacitances of said sensing capacitor and said reference capacitor have a first predetermined relationship, and a second state when said capacitors have a second predetermined relationship.

3,943,377

LOGIC CIRCUIT ARRANGEMENT EMPLOYING INSULATED GATE FIELD EFFECT TRANSISTORS

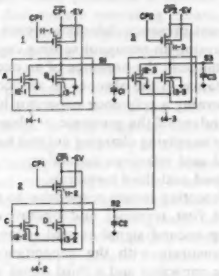
Yasoji Suzuki, Kawasaki, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Division of Ser. No. 358,877, May 10, 1973, Pat. No. 3,866,186. This application Aug. 23, 1974, Ser. No. 499,924
Claims priority, application Japan, May 16, 1972, 47-47667; May 29, 1972, 47-52427; May 29, 1972, 47-52428
Int. Cl.² H03K 19/08, 19/34, 19/36
U.S. Cl. 307—205 2 Claims

1. A logic circuit arrangement comprising:
a plurality of logic circuits, outputs of at least two preceding logic circuits being coupled to inputs of a succeeding logic circuit;
a source of first and second clock pulses;
each of said at least two preceding logic circuits including first and second power supply terminals, a first output terminal, at least one first input terminal for receiving a data input signal, a first insulated gate field effect transistor of a first channel type having gate, source and drain electrodes, the source-drain path of said first insulated gate field effect transistor being coupled between said first power supply terminal and said first output terminal and the gate electrode of said first insulated gate field effect transistor being coupled to receive a first clock pulse, and at least one second insulated gate field effect transistor of a second channel type having gate, source and drain electrodes, the source-drain path of said at least one second insulated gate field effect transistor being

coupled between said first output terminal and said second power supply terminal and the gate electrode of said at least one second insulated gate field effect transistor being coupled to said at least one first input terminal;

said succeeding logic circuit comprising third and fourth power supply terminals, a second output terminal, at least two second input terminals coupled to said first output terminals of said at least two preceding logic circuits, respectively, a third insulated gate field effect transistor of said first channel type having gate, source and drain electrodes, the source-drain path of said third insulated gate field effect transistor being coupled between said third power supply terminal and said second output terminal, and the gate electrode of said third insulated gate field effect transistor being coupled to receive a second clock pulse, and at least two fourth insulated gate field effect transistors of said second channel type each having gate, source and drain electrodes, the source-drain paths



of said at least two fourth insulated field effect transistors being coupled between said second output terminal and said fourth power supply terminal, and the gate electrodes of said at least two fourth insulated gate field effect transistors being coupled to said second input terminals, respectively;

said clock pulse source providing said first and second clock pulses each of which has a first voltage level period and a second voltage level period following said first voltage level period, the first voltage level period of said first and second clock pulses starting at the same time and the first voltage level period of the second clock pulse being longer than that of the first clock pulse to thereby render a conducting period of said third transistor longer than that of said first transistor; and

means for supplying third and fourth clock pulses which are respectively complementary to said first and second clock pulses, to said second and fourth power supply terminals, respectively.

3,943,378

CMOS SYNCHRONOUS BINARY COUNTER

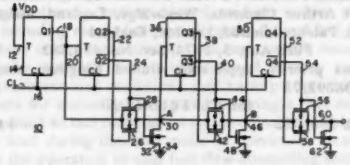
Robert Russel Beutler, Tempe, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed Aug. 1, 1974, Ser. No. 493,575

Int. Cl.² H03K *21/16, 23/22, 23/24*

U.S. Cl. 307—224 C **5 Claims**

4. A binary counter including an input flip-flop stage having a toggle input, a clock input, and a Q output, and a plurality of other flip-flop stages, each having a toggle input, a clock input, a Q output and a Q output, each of said flip-flops having its clock input coupled to a clock conductor adapted for having a clock signal applied thereto, each of said plurality of flip-flop stages having coupled thereto a CMOS transmission gate having a first and second main electrode and including a P-Channel MOSFET and an N-Channel MOSFET coupled in parallel and a discharge MOSFET, said P-Channel MOSFET having a gate electrode coupled to said Q output of said flip-flop and each N-Channel MOSFET having a gate electrode coupled to said Q output of said flip-flop and each discharge MOSFET having a gate electrode coupled to said Q output of said flip-flop, said first main electrode of each CMOS trans-



mission gate being coupled to said toggle input of said flip-flop and said second main electrode coupled to a first node, each said first node being coupled to said toggle input of a following flip-flop except said first node of a last flip-flop which is coupled to an output of said binary counter.

3,943,379

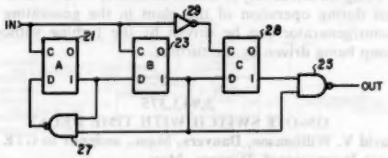
SYMMETRICAL ODD MODULUS FREQUENCY DIVIDER

William George McGuffin, Willingboro, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 29, 1974, Ser. No. 518,718

Int. Cl.² H03K *23/00*

U.S. Cl. 307—225 R **3 Claims**



1. A circuit for symmetrically dividing by an odd modulus *m* comprising

n flip-flop means for storing signals,

where $n = (m+3)/2$;

a source of input pulses to be divided;

complementing means for complementing said input pulses;

first coupling means for controlling the first $(n-1)$ flip-flop means with said input pulses;

second coupling means for controlling the *n*th flip-flop means with said complemented input pulses;

means for coupling the signal stored in the *i*-th flip-flop means to the *j*-th flip-flop means for storage, where $i = 1, 2, \ldots, n-1$ and $j = 2, 3, \ldots, n$;

first gating means responsive to the signals stored in the $(n-1)$th and $(n-2)$th flip-flop means for producing a signal which is stored in the first flip-flop means by each input pulse; and

second gating means responsive to the signals stored in the *n*th and $(n-1)$th flip-flop means for producing an output signal.

3,943,380

KEYED COMPARATOR

David Keith Morgan, Flemington, and Robert Charles Heuner, Bound Brook, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed July 26, 1974, Ser. No. 492,134

Int. Cl.² H03K *5/20;* **H03F** *3/45, 3/16;* **G05F** *3/02*

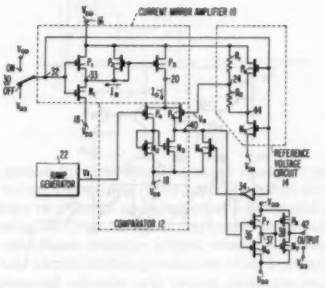
U.S. Cl. 307—235 T **10 Claims**

1. In combination:

two terminals across which an operating voltage may be applied;

reference voltage establishing means comprising a voltage divider and a switch connected in series between said terminals;

a current amplifier comprising input current path means, including a switch in series in said path means, said path means connected between one of said terminals serving as the input terminal of said amplifier and the other of said terminals serving as the common terminal of said amplifier, and output current path means connected between said common terminal and the output terminal of said current amplifier, said switch, when open, serving to terminate the flow of current between said input terminal and said common terminal of said amplifier and



thereby to terminate also the flow of current between said common terminal and said output terminal of said amplifier;

a comparator comprising a differential amplifier having a common terminal, an output terminal, and two signal input terminals, said common terminal of said comparator connected to said output terminal of said current amplifier, one of said input terminals connected to a point along said voltage divider and the second input terminal for receiving a voltage which may vary to values greater and less than that at said point along said voltage divider; and

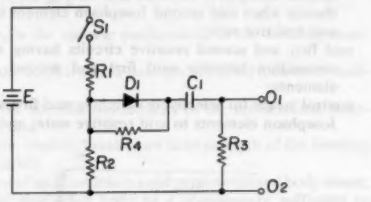
means coupled to said switch of said reference voltage establishing means and to said switch of said current amplifier for concurrently closing and opening these switches.

3,943,381
PULSE GENERATING APPARATUS HAVING A CHATTERING PULSE ELIMINATION CIRCUIT

Masanori Uchidoi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 4, 1973, Ser. No. 393,895
Claims priority, application Japan, Sept. 7, 1972, 47-89799
Int. Cl.² H03K *17/56*
U.S. Cl. 307—247 A **13 Claims**

1. An apparatus for transmitting the movement of a switch from one position to another between one circuit containing the switch and another circuit, said switch having an expected rate of contact bounce, comprising a capacitance, circuit means for connecting said capacitance in series between the one circuit and the other, characterized in that said circuit means includes means for charging said capacitance to a voltage appearing at the switch at a rate at least as fast as the expected contact bounce when the switch assumes one of its positions and for discharging said capacitance at a rate substantially slower than the contact bounce when the switch assumes its other position, said means in said circuit including

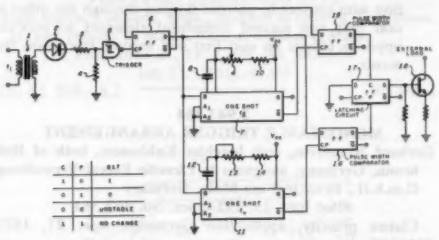


a unidirectional current carrying member connected in series between the one circuit and the capacitance.

3,943,382
FREQUENCY OPERATED SWITCH

James E. Hermansdorfer, and Wilbert E. Swygert, Jr., both of Charlottesville, Va., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 23, 1974, Ser. No. 535,523
Int. Cl.² H03K *5/20*
U.S. Cl. 307—233 R **7 Claims**



1. A frequency operated switch comprising input means for providing a first train of rectangular pulses having durations indicative of the period of an alternating input signal frequency to be monitored, reference means synchronized by pulses in said first train for providing second and third trains of rectangular reference pulses, the pulses in said second train having durations corresponding to a lower reference frequency equal to the minimum acceptable input signal frequency, the pulses in said third train having durations corresponding to an upper reference frequency intermediate the nominal signal frequency and the minimum acceptable frequency, logic means responsive to the pulses in the three pulse trains for initiating a disabling signal when the duration of the pulses in said first train exceeds the duration of the pulses in said second train and for maintaining a disabling signal until the duration of the pulses in said third train exceed the duration of the pulses in said first train.

3,943,383
SUPERCONDUCTIVE CIRCUIT LEVEL CONVERTER

Harvey C. Hamel, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 23, 1974, Ser. No. 463,327
Int. Cl.² H03K *3/38, 19/195*
U.S. Cl. 307—261 **7 Claims**

1. A binary circuit for converting unipolar coded data signals to bipolar data signals comprising:

a first and second Josephson element having a zero voltage state and a resistive state connected in series in the circuit;

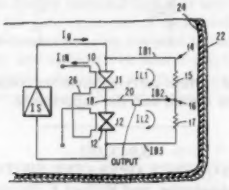
a first resistive circuit connected in parallel with said first Josephson element and having current flowing therein

when said first Josephson element switches to said resistive state;

a second resistive circuit connected in parallel with said second Josephson element and having current flowing therein when said second Josephson element switches to said resistive state;

said first and second resistive circuits having a common connection between said first and second Josephson elements;

control means for selectively switching said first and second Josephson elements to said resistive state; and



said control means includes a current carrying conductor which is parallel to said first and second Josephson elements, the current through which flows in the same direction as current flowing through one of said first and second Josephson elements and flows in the opposite direction with respect to current flowing through the other of said first and second Josephson elements to produce opposite effects on said first and second Josephson elements.

3,943,384

MONOSTABLE TRIGGER ARRANGEMENT

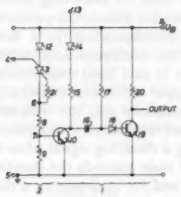
Gerhard Krumrein, and Joachim Kuhlmann, both of Heilbronn, Germany, assignors to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt am Main, Germany

Filed Apr. 23, 1974, Ser. No. 463,361

Claims priority, application Germany, Apr. 27, 1973, 2321255

Int. Cl.² H03K *3/10, 3/35*

U.S. Cl. 307—273 **5 Claims**



1. A monostable trigger arrangement comprising: a monostable trigger stage for producing an output pulse; a bistable switching circuit means having its output connected to said monostable trigger stage, and responsive to a control pulse for switching said bistable switching circuit means from an untriggered state to a triggered state and to an erase pulse for switching same from said triggered state back to said untriggered state, for controlling said monostable trigger stage to release an output pulse only when said switching circuit means is switched to said triggered state, said bistable switching circuit means including a thyristor connected across a pair of voltage supply terminals and having a single gate electrode for receipt of said control and said erase pulses, said thyristor being rendered conductive, and thus switched to said triggered state, in response to a control pulse applied to said gate electrode, and being rendered nonconductive, and thus switched back to the untriggered state, in response to an erase pulse applied to said gate electrode.

3,943,385

TIME SWITCH CIRCUIT HAVING A SWITCH-BACK TIME DELAY

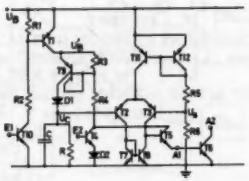
Gerhard Achtstaetter, Freiburg, Germany, assignor to ITT Industries Inc., New York, N.Y.

Filed Oct. 1, 1974, Ser. No. 510,949

Claims priority, application Germany, Oct. 10, 1973, 2350737

Int. Cl.² H03K *5/13*; H02J *1/02*; H02M *1/12*; B60Q *1/00*

U.S. Cl. 307—293 **7 Claims**



1. A circuit having a delayed starting storage behavior in response to a first input signal and having a substantially longer delayed stoppage of said storage behavior in response to a second input signal, comprising:

means for receiving a supply voltage;

an RC parallel circuit having one end coupled to the zero point of the circuit;

a first diode;

a first current mirror circuit having first and second current outputs, said first output coupled to said first diode for charging said RC-circuit;

a second diode;

a first transistor having a base for receiving said second input signal, an emitter coupled to the zero point of the circuit via said second diode, and a collector coupled to said first current mirror circuit for switching on and off said second current output;

a source of a fixed predetermined voltage;

a differential amplifier having a first input coupled to said RC-circuit and a second input coupled to said source;

a second current mirror circuit coupled between the zero point of the circuit and said differential amplifier;

a third current mirror circuit coupled between said means for receiving and said differential amplifier;

a second transistor having a base coupled to said second current mirror circuit and to said differential amplifier, a collector coupled to the collector of said first transistor, and an emitter for serving as a first output;

a third transistor having an emitter coupled to the zero point of the circuit, a collector coupled to said means for receiving, and a base for receiving said first input signal; and

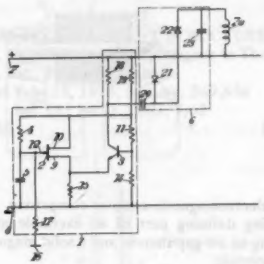
a fourth transistor having an emitter coupled to said means for receiving, a base coupled to the collector of said third transistor and a collector coupled to said first current mirror circuit.

3,943,386

BURNER FUEL SUPPLY CONTROL SIGNAL GENERATING DEVICE

Bernard Jules Alexandre Simeau, Chadrac, France, assignor to Constructions Electriques R.V., Le Puy, France

Filed July 3, 1974, Ser. No. 485,349
Claims priority, application France, July 17, 1973, 73.26130
Int. Cl.² H01H 37/32
U.S. Cl. 307—310 15 Claims



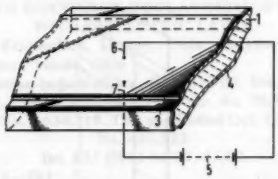
1. In a system for generating a control signal for supplying fuel to a burner comprising flame detector means for providing a voltage responsive to detection of a flame and a circuit for generating said control signal responsive to detection of a flame by said flame detector means, whereby failure of elements of said circuit inhibits production of said control signal; the improvement wherein said circuit comprises an astable multivibrator consisting of a field effect transistor with means regeneratively interconnecting the drain and gate of said field effect transistor, so that output oscillations by said multivibrator is dependent upon the potential at the gate of said field effect transistor, and resistor means connected to apply said voltage to said gate, so that said multivibrator oscillates only when said flame detecting voltage has an amplitude between determined values, and means deriving said control signal from said output oscillations.

3,943,387

PROCESS FOR MAKING A PIEZOELECTRIC BODY

Richard Veith, Unterhaching, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 28, 1974, Ser. No. 455,592
Claims priority, application Germany, Mar. 29, 1973, 2315767
Int. Cl.² H01L 41/04; H04R 17/00
U.S. Cl. 310—8 17 Claims



1. A process for producing a piezoelectric body which may be polarized in an aligned permanent fashion comprising:

mixing a select amount of a granular ferroelectric material having a Curie temperature greater than 200° C. with a sufficient amount of a fluidized bonding material to bind said granular ferroelectric material into a cohesive body, said bonding material being characterized by a specific conductivity below said Curie temperature of the ferroelectric material in accordance with the formula

$$\sigma_B \quad E_C \times \sigma_K / E_B$$

wherein σ_B is the specific conductivity of the bonding material;

E_C is the coercive field strength of the ferroelectric material;

σ_K is the specific conductivity of the ferroelectric material; and

E_B is the electric breakdown field strength of the bonding material;

shaping said mixture into a solid predetermined body shape;

heating said solid body to a temperature sufficient to exhibit said specific conductivity in the bonding material but below said Curie temperature of the ferroelectric material; and

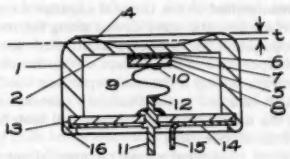
applying an electric voltage of sufficient intensity to said heated solid body to produce a permanent polarization alignment in the ferroelectric material within said solid body but below that required to heat damage the bonding material.

3,943,388

ELECTROACOUSTIC TRANSDUCER OF THE FLEXURAL VIBRATING DIAPHRAGM TYPE

Frank Massa, Cohasset, Mass., assignor to Fred M. Dellorfano, Jr. and Donald P. Massa, both of Cohasset, Mass.

Filed June 27, 1974, Ser. No. 483,549
Int. Cl.² H01L 41/04
U.S. Cl. 310—8.2 9 Claims

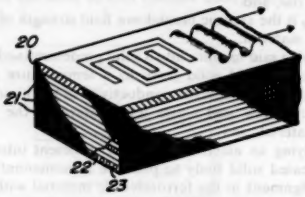


1. In combination in an electroacoustic transducer, a tubular housing structure, a vibratile diaphragm peripherally clamped to said housing structure, said diaphragm characterized in that it operates in a flexural resonant mode of vibration at a prescribed resonant frequency, said vibratile diaphragm further characterized in that its external radiating surface is concave whereby the thickness of said diaphragm increases from the center portion of said vibratile diaphragm to the outer peripheral rim portionn of said vibratile diaphragm, said vibratile diaphragm still further characterized in that the increased flexural stiffness of said diaphragm resulting from the increased thickness of said diaphragm near its peripheral region has a substantial influence in the determination of the flexural resonant frequency of said electroacoustic transducer, said diaphragm still further characterized in that the increased flexural stiffness resulting from said increase in thickness of said diaphragm near its peripheral region is sufficient to cause an increase in the flexural resonant frequency of said electroacoustic transducer above the prescribed resonant frequency of operation of said transducer, electromechanical transducer means for converting alternating electrical signals to alternating mechanical forces, said electromechanical transducer means adapted for driving said flexural vibratile diaphragm means, and electrical terminal means connected to said electromechanical transducer means.

3,943,389
TEMPERATURE STABILIZATION OF SURFACE ACOUSTIC WAVE SUBSTRATES

Fred S. Hickernell, Phoenix, and Larry A. Moore, Scottsdale, both of Ariz., assignors to Motorola, Inc., Chicago, Ill.

Filed July 2, 1974, Ser. No. 485,176
Int. Cl.² H01L 41/04
U.S. Cl. 310—9.5 10 Claims



1. A temperature compensated surface acoustic wave structure including a surface acoustic wave device comprising a body of piezoelectric material having a first planar surface on which surface waves are generated and a second planar surface, said temperature compensated surface acoustic wave structure comprising in combination:

a composite laminate substrate composed of an array of laminae;

said composite laminate substrate being laminated to the second surface of the surface acoustic wave device with the surface acoustic wave device forming an exterior lamina of a composite laminate;

said substrate having a thermal expansion coefficient selectedly mismatched to the thermal expansion coefficient of the surface acoustic wave device along the axis of acoustic propagation for inducing controlled stress changes with temperature at the surface of the device;

said substrate having a thermal expansion coefficient substantially matched to the thermal expansion characteristics of the device along the orthogonal material property axis of the device; and

said induced controlled stress changes along the axis of acoustic propagation causing the temperature coefficient of delay of the surface wave device to be essentially zero over a predetermined temperature range.

3,943,390
DECELERATION DETECTING DEVICE

Takeshi Ochiai, 7, Toyota-cho, Toyota, Aichi, Japan

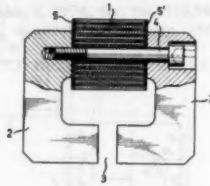
Filed June 26, 1974, Ser. No. 483,383
Claims priority, application Japan, July 9, 1973, 48-77221
Int. Cl.² H02K 35/06
U.S. Cl. 310—15 3 Claims

1. An acceleration sensing device for a vehicle comprising, a cylindrical casing of magnetic material having at one end thereof a radially inner shoulder, end closure caps secured to opposite ends of said casing and mounted on a stationary portion of the vehicle, an annular magnet arranged at the other end of said cylindrical casing, an annular induction coil disposed between said shoulder of the casing and said annular magnet, a bolt disposed through coaxial aligned openings of said shoulder and said coil, and said magnet to mutually secure said cylindrical casing and said end closure caps, a sleeve member of magnetic material slidably mounted on said bolt and provided with a radially outer flange which faces said shoulder of the casing, and a coil spring disposed between one of said end closure caps and one end of said slidable sleeve member to normally hold a predetermined clearance between said shoulder of the casing and said flange of the movable sleeve member.

3,943,391
ELECTROMAGNETIC COUPLER HAVING AN ELECTROMAGNETIC WINDING

Henri Fehr, Montmorency, France, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Oct. 11, 1973, Ser. No. 405,634
Claims priority, application Switzerland, Oct. 12, 1972, 14926/72
Int. Cl.² H02K 49/00
U.S. Cl. 310—103 7 Claims



1. An electromagnetic coupler comprising

a housing defining part of an excitable magnetic circuit having an air-gap therein and a solid magnetizable core of said circuit;

a drive shaft rotatably mounted in said housing;

a rotor fixedly mounted on said shaft;

a single ring of poles mounted on said rotor and disposed in said air-gap;

a driven shaft spaced from said first shaft;

a second rotor fixedly mounted on said driven shaft;

a single ring of poles mounted on said second rotor and disposed about said first ring of poles;

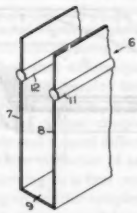
a substantially annular excitation winding disposed concentrically about said drive shaft and said core, said winding having a plurality of coils disposed in insulated manner with respect to each other, said coils being of a magnetically highly permeable strip material to form at least a part of said magnetizable core of said magnetic circuit with said winding being magnetizable in a longitudinal direction thereof; and

a non-magnetizable part-winding concentrically about said excitation winding.

3,943,392
COMBINATION SLOT LINER AND RETAINER FOR DYNAMOELECTRIC MACHINE CONDUCTOR BARS

John J. Keuper, Cold Spring, Ky., and Paul D. Wagner, Cincinnati, Ohio, assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 27, 1974, Ser. No. 527,809
Int. Cl.² H02K 3/36
U.S. Cl. 310—215 1 Claim



1. In a dynamoelectric machine including a core having a plurality of slots defined by side walls for receiving conductor bars, the improvement comprising: longitudinally extending grooves in said side walls; a substantially U-shaped slot liner defined by a pair of spaced legs, said slot liner having a longi-

tudinally extending rib protruding from each side of each of said legs which aligns and mates with said coil slot side wall grooves when said lining is in the operative position; and a longitudinally extending groove in the sides of said conductor bars, said conductor bar grooves being in alignment and mating with said slot liner ribs when they are in the operative position, said slot liner ribs being constructed of a resilient absorbent material which after being impregnated with a thermosetting material and heated will cure and harden to securely hold said liner and conductor bars in said slots.

3,943,393

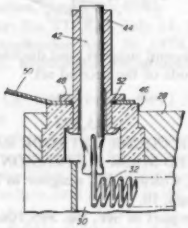
STRESS FREE FILAMENT STRUCTURE

Eugene J. Naill, New Canaan, Conn., assignor to The Machlett Laboratories, Inc., Stamford, Conn.

Filed Feb. 13, 1975, Ser. No. 549,636

Int. Cl.² H01J *35/02, 5/62*

U.S. Cl. 313—60 **11 Claims**



1. An electron discharge device having an envelope with at least one electrode therein, an electrode support comprising an insulating member, electrically conductive support means carried by said insulating member and attached at one end to said electrode, a lead wire penetrating said envelope and having an end portion terminating adjacent said support means, and a flexible electrically conductive member connecting said support means and adjacent end portion of the lead wire in stress-relieving relation thereto, said support means comprising a tubular member fixed within the insulating member, and a metal pinlike member mounted within the tubular member, the electrode being attached to the pinlike member, and the flexible member being attached to the tubular member, said tubular member having a circumferential flange thereon overlying the insulating member, a portion of said flexible member being disposed between said flange and insulating member in stable fixed relation therewith.

3,943,394

GASEOUS DISCHARGE DISPLAY/MEMORY PANEL WITH DIELECTRIC LAYER

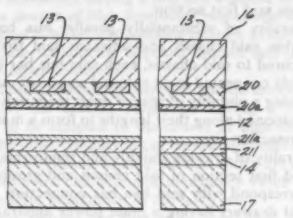
Roger E. Ernthausen, Luckey, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 204,700, Dec. 3, 1971, abandoned, Continuation-in-part of Ser. No. 70,745, Sept. 8, 1970, Pat. No. 3,634,719. This application Oct. 12, 1973, Ser. No. 406,022

Int. Cl.² H01J *65/00, 61/02*

U.S. Cl. 313—201 **7 Claims**

1. In a gaseous discharge display/memory device characterized by an ionizable gaseous medium in a gas chamber formed by a pair of opposed dielectric material charge storage members having surfaces in contact with the gaseous medium and at least one electrode insulated from the gaseous medium by a dielectric member, the improvement wherein each dielectric surface is at least partially coated with a layer of at least one inorganic non-lead oxide lead compound, said compound being present in an amount sufficient to improve the operating characteristics of the device by substantially decreasing preliminary aging and providing stable operating voltages for a given period of operating time.



3,943,395

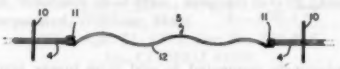
TUBULAR INCANDESCENT LAMP HAVING SPACED SEGMENTS

Leroy Huston, Candia, N.H., and George D. Gounaris, Haverhill, Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Dec. 6, 1974, Ser. No. 530,118

Int. Cl.² H01K *1/24*

U.S. Cl. 313—273 **2 Claims**



1. In an elongated, tubular, double-ended incandescent lamp of the type where the filament is axially located and comprises separated filament coiled segments, the improvement which comprises spacer wire sections between said coiled segments, each spacer wire section consisting of a single length of wire and further consisting of a coil at each end thereof with an intermediate skip-space therebetween, each of said coils being electrically and mechanically fastened to the adjacent filament coiled segment by being threaded onto the end of said adjacent filament coiled segment, the diameter of the wire of said spacer wire section being larger than the diameter of the wire of said filament coiled segment.

3,943,396

HIGH LUMINOUS INTENSITY ARC ELECTRODE OF LANTANUM CHROMITE

Saburo Kose, and Makoto Kinoshita, both of Ikeda, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Mar. 25, 1974, Ser. No. 454,227

Claims priority, application Japan, May 21, 1973, 48-57062

Int. Cl.² H01J *1/05, 1/14, 1/38, 1/48*

U.S. Cl. 313—311 **4 Claims**

1. An arc electrode for producing a spectral distribution, approximating that of white light formed of a sinter comprising essentially lanthanum chromite.

3,943,397

UNITIZED THEATER LIGHTING SYSTEM MAIN POWER UNIT

Leroy D. Yancey, 1834 S. Oakmont Drive, Bountiful, Utah 84010

Continuation-in-part of Ser. No. 423,073, Dec. 10, 1973, abandoned. This application Feb. 24, 1975, Ser. No. 552,555

Int. Cl.² H05B *37/00*

U.S. Cl. 315—317 **13 Claims**

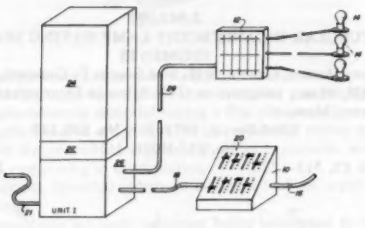
1. A main power unit for use in a theater lighting system

which regulates the luminescence of incandescent lamps, comprising:

a chassis having a first section and a second section remote from said first section;

a plurality of substantially parallel bus bars positioned within said chassis and adjacent said first section and secured to said chassis, each said bus bar being conductively connected to an external source of main power and having a plurality of spaced apart main power connectors positioned along their lengths to form a matrix of bus bar connection sites;

a plurality of drawers slidably and removable positioned in said first section of said chassis and grouped in rows to correspond with said bus bar connection sites, each of said drawers having a main power apparatus positioned therein, a drawer input connector conductively connected to said main power apparatus for connection with a said main power connector, a drawer output connector



conductively connected to said main power apparatus, and a control signal input connector conductively connected to said main power apparatus;

equipment rack means having a plurality of substantially parallel support members secured to said chassis and positioned within said first section of said chassis to support said drawers, each said support member having control connectors positioned along their lengths to correspond with and connect to said control signal input connectors of said drawers;

a plurality of output means conductively connected to said drawer output connectors and to said incandescent lamps; and

a plurality of control circuits positioned in said second section of said chassis, each of said circuits being conductively connected to receive control signals from an external source and to supply control signals to said support member control connectors.

3,943,398

ELECTRONIC TUBE WITH CYLINDRICAL ELECTRODES

Pierre Gerlach, Paris, France, assignor to Thomson-CSF, Paris, France

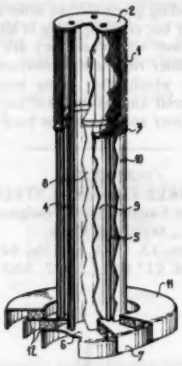
Filed Dec. 17, 1974, Ser. No. 533,716

Claims priority, application France, Dec. 21, 1973, 73.46036

Int. Cl.² H01J *1/15, 19/08*

U.S. Cl. 313—341 **4 Claims**

1. An electronic tube with cylindrical electrodes constituted by cylinders arranged around a common axis, the cathode of which, constituted by a metal mesh wrapped to form a cylinder fixed at one of its ends to a metal disc and at the other end to a ring, is supported by two sets of rods, the rods of one of said sets being fixed at one of their ends to said metal disc and at the other ends to a first support parallel to said metal disc, and the rods of the other set being fixed at one of their ends to said ring and at the other ends to a second support parallel to the first support, characterised in that the tube comprises sleeves numbering at least three altogether, one sleeve, attached to said metal disc and to said first support, surrounding the rods of the first set, and the two other sleeves, fixed to said



ring and to said second support, and disposed to either opposite sides of the rods of the second set.

3,943,399

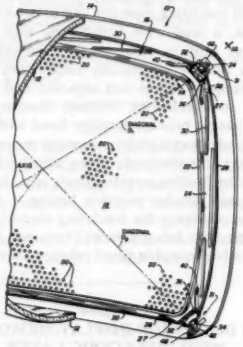
SHADOW-MASK COLOR CATHODE RAY TUBE WITH IMPROVED MASK SUSPENSION SYSTEM

Stanley J. Sedivy, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 395,106, Sept. 7, 1973, abandoned. This application Dec. 23, 1974, Ser. No. 535,473

Int. Cl.² H01J *29/02, 29/08, 31/20*

U.S. Cl. 313—404 **43 Claims**



1. For use in a color cathode ray tube having an envelope which includes an approximately rectangular, flangeless, curved faceplate supporting on a concave inner surface thereof in a central region a phosphor screen comprising a pattern of red-emissive, blue-emissive and green-emissive phosphor triads, said faceplate being subject, due to its flangeless rectangular configuration, to twist-wise deformations in its configuration which may occur with respect to its diagonals, the combination comprising:

an approximately rectangular non-self-rigid shadow mask having a curved central portion containing a pattern of electron-transmissive apertures registerable with said pattern of phosphor triads and a stiffening portion circumscribing said central portion, said stiffening portion

permitting said mask to flex with respect to its diagonals; and

a mask suspension system for supporting said shadow mask at a predetermined spacing from said inner surface of said faceplate portion, comprising four suspension devices, one at each corner of the faceplate portion, for mechanically coupling said mask to said envelope such that said mask can flex about a diagonal, if necessary, to conform to the contour of said faceplate, at least three of said suspension devices including a metal stud on said faceplate in a corner region thereof on an area of said concave inner surface which extends outwardly beyond said phosphor screen, and a mask-mounted component on the outside of said stiffening portion of said mask, said mask-mounted component including spring means having provision for retentively engaging said stud.

3,943,400
CATHODE-RAY TUBE PROVIDED WITH A LUMINESCENT SILICATE

Roelof Egbert Schuil, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 271,833, July 14, 1972, Pat. No. 3,855,143. This application Aug. 30, 1974, Ser. No. 502,150
Claims priority, application Netherlands, July 24, 1971, 7110248
Int. Cl.² C09K *11/46*; H01J *29/20*
U.S. Cl. 313—468 **3 Claims**

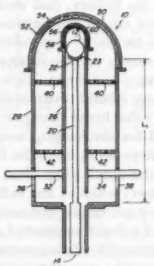
1. A cathode ray tube for flying spot scanners, said cathode-ray tube being provided with a faceplate coated with a luminescent layer comprising a luminescent silicate having the olivine crystal structure, said silicate being activated by trivalent cerium and having the formula $Li_{1-x}Na_xY_{1-p}Ce_pSiO_4$, where $[0 \leq x \leq 0.90]$ $0.50 < x < 0.80$ and $0.0001 \leq p \leq 0.25$ and means to produce an electron beam to excite said silicate to luminescence.

3. The cathode-ray tube of claim 1 wherein the luminescent layer comprises in addition a yttrium aluminate activated by trivalent cerium, having the garnet structure, an emission in the green and red parts of the spectrum and a decay time of less than 10^{-7} sec.

3,943,401
ELECTRODELESS LIGHT SOURCE HAVING A LAMP HOLDING FIXTURE WHICH HAS A SEPARATE CHARACTERISTIC IMPEDANCE FOR THE LAMP STARTING AND OPERATING MODE

Paul Osborne Haugsjaa, Acton; Robert James Regan, Needham, and William Henry McNeill, Carlisle, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 21, 1975, Ser. No. 570,111
Int. Cl.² H01J *61/56*
U.S. Cl. 315—39 **10 Claims**



1. In a light source having an electrodeless lamp with an envelope made of a light transmitting substance and enclosing a volatile fill material which emits light upon breakdown and excitation a termination fixture for coupling high frequency power to the lamp including:

a. an inner conductor having a first end adapted to be coupled to a source of high frequency power and a second end adapted to be in field coupling relation to the lamp,

b. a first outer conductor disposed around and insulated from the inner conductor,

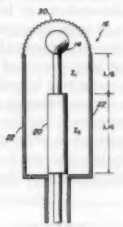
c. a second outer conductor disposed around the first outer conductor, the second conductor having a first end adapted to be coupled to the source of high frequency power, the inner conductor and the second outer conductor having dimensions in cross section which are selected to produce a first characteristic impedance which is effective to initiate breakdown in the lamp, and

d. means for moving the first outer conductor along its longitudinal axis to cause the first outer conductor to contact the second outer conductor at the source coupled end, the inner conductor and the first outer conductor having dimensions in cross section selected to produce a characteristic impedance which matches the lamp impedance during operation to the output impedance of the source.

3,943,402
TERMINATION FIXTURE FOR AN ELECTRODELESS LAMP

Paul Osborne Haugsjaa, Acton; William Henry McNeill, Carlisle; Robert James Regan, Needham, and Joseph Martin Lech, Westford, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 21, 1975, Ser. No. 570,055
Int. Cl.² H01J *61/56*
U.S. Cl. 315—39 **10 Claims**



1. A light source including,

a. a source of power at a high frequency,

b. an electrodeless lamp having an envelope made of a light transmitting substance, the envelope enclosing a volatile fill material which emits light upon breakdown and excitation, the lamp having a complex impedance in the operating condition; and

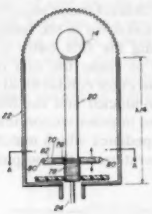
c. a termination fixture coupled to the source, the fixture having an inner conductor and an outer conductor disposed around the inner conductor, the conductors, having a first end which couples power to the lamp and a second end which is coupled to the source, the fixture having at least first and second sections of different values of characteristic impedance, the values of characteristic impedance and the lengths of the sections being selected to match the complex impedance of the lamp in the operating condition to the output impedance of the source.

3,943,403

ELECTRODELESS LIGHT SOURCE UTILIZING A LAMP TERMINATION FIXTURE HAVING PARALLEL CAPACITIVE IMPEDANCE MATCHING CAPABILITY

Paul Osborne Haugsjaa, Acton; Robert James Regan, Needham; William Henry McNeill, Carlisle, and Joseph Martin Lech, Westford, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 21, 1975, Ser. No. 570,109
Int. Cl.² H01J 61/56
U.S. Cl. 315—39 **13 Claims**



1. A light source including:
a. a source of power at a high frequency,
b. an electrodeless lamp having an envelope made of a light transmitting material and a volatile fill material within the envelope, the fill material emitting light upon breakdown and excitation, and
c. a termination fixture coupled to the source, the fixture including an inner conductor and an outer conductor disposed around the inner conductor, the first ends of the conductors being coupled to the lamp so that the lamp forms a termination load for the fixture, the second ends of the conductors being coupled to the source, the conductors having dimensions in length and cross section such that the fixture impedance matches the real component of the complex impedance of the lamp during excitation to the output impedance of the source, the fixture further including a reactive impedance device disposed in the fixture in the region between the conductors near the second end for compensating for the reactive part of the lamp complex impedance, whereby the input impedance of the fixture during the excited state of the lamp is matched to the impedance of the coupled source.

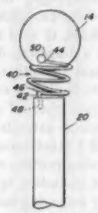
3,943,404

HELICAL COUPLER FOR USE IN AN ELECTRODELESS LIGHT SOURCE

William Henry McNeill, Carlisle; Paul Osborne Haugsjaa, Acton; Robert James Regan, Needham, and Joseph Martin Lech, Westford, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 21, 1975, Ser. No. 570,110
Int. Cl.² H01J 61/56
U.S. Cl. 315—39 **9 Claims**

1. A light source including:
a. a source of power at a high frequency,
b. an electrodeless lamp having an envelope made of a light transmitting substance and a volatile fill material capable of emitting light upon excitation enclosed within the envelope, and
c. a termination fixture coupled to the source, the fixture including an inner conductor and an outer conductor disposed around the inner conductor, the conductors having lengths of a quarter wavelength and cross-sectional dimensions selected to produce a fixture characteristic impedance which matches the real portion of the lamp impedance in the excited state to the impedance of the coupled source, and
d. the fixture further including a reactive impedance device coupled between the end of the inner conductor and the lamp, the device being selected to cancel a portion of the



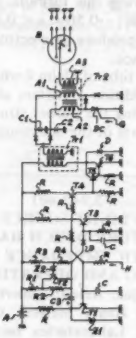
reactive part of the complex impedance of the lamp in the excited state, thereby enhancing the impedance match between the lamp and the source.

3,943,405

SYSTEM OF CAPACITIVE DISCHARGE IGNITION FOR AUTOMOBILE VEHICLES WITH A CONVERTER GOVERNED BY A MULTI-VIBRATOR

Francisco Javier Lanzas Galvache, Madrid, Spain, assignor to Fabrica Espanola Magnetos, S.A., Madrid, Spain

Filed June 10, 1974, Ser. No. 478,000
Claims priority, application Spain, Feb. 6, 1974, 422971
Int. Cl.² H03K 3/284
U.S. Cl. 315—209 CD **2 Claims**



1. A system for capacitive discharge ignition for automobile vehicles having a battery, a distributer and associated spark-plugs, said system including means for maintaining constant ignition characteristics of the spark-plugs independently of feed voltage from the battery, said means including a monostable multi-vibrator connected between the battery and the distributer, control means for controlling time of communtation of said monostable multi-vibrator, said control means including a resistance-condenser network, diode means for charging a condenser of said resistance-condenser network to a constant voltage value lower than lowest value of the voltage of the battery and for discharging said condenser at a time constant which is dependent upon the feed voltage to provide greater power to the spark-plugs than can be obtained normally from the battery when at low voltage, said diode means including a Zener-type diode connected in parallel with a collector-emitter of a first transistor of said monostable multi-vibrator, said first transistor being normally in OFF for charging said condenser, and a second transistor of said monostable multi-vibrator being connected to a resistance of said resistance-condenser network to shortcircuit said resistance when the feed voltage is higher than a prefixed value.

3,943,406
CONTROL OF ELECTRONICALLY GENERATED LIGHT PULSES

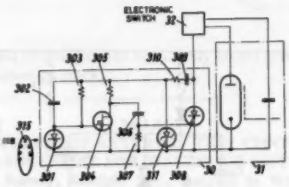
Zoltan Vital, Uccle, and Jean Orban, Clabecq, both of Belgium, assignors to Ponder and Best, Inc., Los Angeles, Calif.

Division of Ser. No. 17,634, March 9, 1970, Pat. No. 3,749,921, which is a continuation-in-part of Ser. No. 799,554, Feb. 13, 1969, abandoned. This application May 10, 1973, Ser. No. 358,974

Claims priority, application Belgium, Mar. 7, 1969, 71104; June 27, 1969, 75962; Sept. 22, 1969, 79321

Int. Cl.² H05B 39/00

U.S. Cl. 315—241 P **7 Claims**



1. A device for controlling the light flashes generated by a flash tube in response to the pulses produced by the discharge of a capacitor, the device including a light sensitive element for measuring received light, and a circuit connected between the element and the tube for terminating a light flash when a predetermined quantity of light has been received by the element, wherein the improvement comprises a light conductor having a light input end and a light output end, and support means supporting said conductor for movement between a plurality of positions in each of which its light input end faces in a respectively different direction and its light output end is directed toward said element, for receiving reflections of light flashes produced by said tube from any one of the respectively different directions, independent of the general direction produced by said tube, and for conducting the light received at its said light input end to said element.

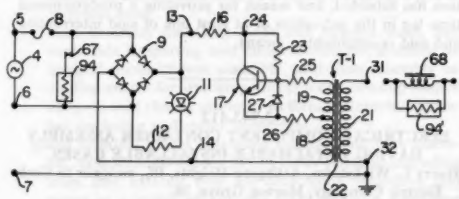
3,943,407
METHOD AND APPARATUS FOR PRODUCING INCREASED QUANTITIES OF IONS AND HIGHER ENERGY IONS

Robert E. Bolasny, Boulder, Colo., assignor to Scientific Enterprises, Inc., Broomfield, Colo.

Filed Aug. 1, 1973, Ser. No. 384,464

Int. Cl.² H05F 3/04

U.S. Cl. 317—4 **47 Claims**



1. In a method of producing ions in a gas with greater efficiency and a minimum of ozone, the steps of:

generating continuous periodic pulses of electric energy, said pulses having a controlled undamped amplitude and having a plurality of successive of said pulses limited in amplitude by repetitive, substantially sinusoidal half-wave envelopes, said envelopes having a frequency less than the frequency of said electric energy pulses, and

applying the generated electric energy to a stream of gas to generate ions.

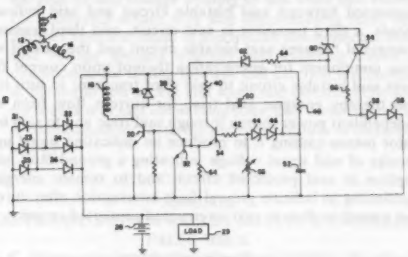
3,943,408
OVER-VOLTAGE PROTECTION CIRCUIT FOR WYE CONNECTED ELECTRIC MACHINE

Hans Jakobs, Schaumburg Township, Cook County, and Charles J. Juhnke, Deerfield, both of Ill., assignors to C. E. Niehoff & Co., Chicago, Ill.

Filed May 28, 1974, Ser. No. 474,012

Int. Cl.² H02H 7/06

U.S. Cl. 317—13 R **16 Claims**



1. An electric power generating system comprising:

a plurality of output windings connected together in wye configuration at a common junction;

first and second power output terminals;

means connecting said output windings to said output terminals;

voltage sensing means responsive to a voltage indicative of an excessive voltage condition between said power output terminals; and

switch means having first and second main terminals and a control terminal, said first main terminal being connected to said common junction, said second main terminal being connected to one of said power output terminals, and said control terminal being coupled to said voltage sensing means, said switch means being responsive to said voltage sensing means for electrically connecting said common junction to said one output terminal when the voltage between said power output terminals exceeds a predetermined amplitude.

3,943,409
MONITOR ASSEMBLY FOR GROUND FAULT INTERRUPTER

William Keith Brown, Lexington, Ky., assignor to Square D Company, Park Ridge, Ill.

Filed Aug. 13, 1974, Ser. No. 497,019

Int. Cl.² H02H 3/28

U.S. Cl. 317—18 R **2 Claims**

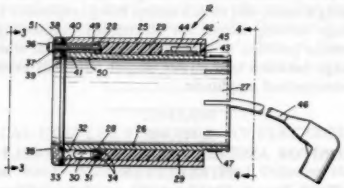
1. A monitor assembly for testing and indicating presence of a ground fault interruption in a protected circuit, including electrically powered indicator means therein operable to provide a signal during the existence of a ground fault interruption in said protected circuit, including an alternating current power source independent of the protected circuit, an indicator circuit and associated components being incorporated in said monitor assembly, said independently powered indicator circuit including said indicator means, rectifying means to provide a rectified power supply for said indicator circuit, voltage regulation means to regulate the voltage in said indicator circuit, detecting means responsive to ground fault interruption in said protected circuit, and electronic switch means operably associated with said detecting means to close said independently powered indicator circuit and energize said indicator means upon occurrence of a ground fault

interruption in said protected circuit and to supply power to continuously energize said indicator means during the existence of said ground fault interruption, wherein said electronic switch means includes a bistable circuit having first and second transistors connected in parallel, a bilateral trigger component having a pre-selected switching voltage value in conjunction with a capacitor and a resistor connected to said detecting conductors for receiving said signal voltage, two diodes connected in parallel between said bilateral trigger component and a respective one of said transistors, the anode of one of said diodes connected to the base of the said first transistor thereby turning it on, the cathode of the other of said diodes connected to the base of said second transistor to cause a reverse bias voltage to appear across said base of said second transistor to cause it to turn off, a triac component connected between said bistable circuit and said indicator means, a third transistor in said circuit, said third transistor connected between said bistable circuit and the gate of said triac component for energization thereof upon current flow from said bistable circuit to said third transistor to turn it on and thereby energize said triac for current flow from said independent power source through said triac and to said indicator means causing it to produce an indicating signal upon receipt of said signal voltage indicating a ground fault interruption in said protected circuit and to remain energized continuing to indicate ground fault interruption after current has ceased to flow in said interrupted protected circuit.

3,943,410
LIGHT ASSEMBLY FOR USE IN A CONDUIT

Karl H. Kalberer, Jr., and Harold D. Fish, both of Duncan, Okla., assignors to Halliburton company, Duncan, Okla.

Filed Sept. 9, 1974, Ser. No. 504,633
Int. Cl.² H02H 3/20; H04N 7/18
U.S. Cl. 317—31 **10 Claims**

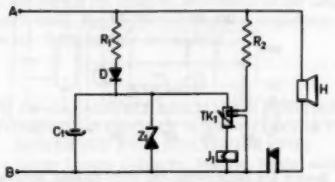


1. A light assembly for use with an apparatus having a camera for inspecting a conduit comprising:
a cylindrical outer sleeve;
a cylindrical inner sleeve spaced concentrically within said outer sleeve forming an annular chamber therebetween;
a plurality of light sources located in the annular chamber and near one end of said inner and outer sleeves;
an electrical cable secured to one of said sleeves for supplying electrical current; and
an electrical circuit located in said annular chamber and connecting said electrical cable to said light sources for passing electrical current when the voltage across said light sources does not exceed a predetermined value, and for interrupting electrical current when the voltage across said light sources does exceed said predetermined value.

3,943,411
OVERLOAD PROTECTION AND DISPLAY CIRCUIT, PARTICULARLY FOR SOUND RADIATORS

Dénes Huszty, 33, Vercse utca, Budapest XII, and Emil Sesztak, 12, Marx Karoly ut, Maglod, both of Hungary

Continuation-in-part of Ser. No. 287,077, Sept. 7, 1972. This application Apr. 10, 1974, Ser. No. 459,684
Claims priority, application Hungary, Apr. 7, 1972, EE 2018
Int. Cl.² H02H 3/08
U.S. Cl. 317—33 R **10 Claims**



1. An overload protective device for processing non-uniform program signals such as speech and music, from a high-power source such as an amplifier means, to at least one high-power electro-acoustic transducer means such as loudspeakers or sound radiators, said device comprising at least one protective circuit, including a first relay therein having a winding and at least one pair of back contacts; a first resistor, a rectifier and a capacitor in a first series chain connection: the sound radiator being in series with said back contacts, connected in parallel with said first chain connection; a reverse-operating Zener diode connected in parallel with said capacitor; a first circuit including in series an indirectly heated thermistor and said relay winding, said first circuit also being connected parallel with said capacitor; said thermistor including a filament winding connected in series with a second resistor; and a second circuit connected in parallel with said first chain connection; constituting means for sensing an overload condition at the output of the high-power source, means for temporarily interrupting full load to the sound radiator upon occurrence of the overload condition, means for immediately re-establishing the full load when the overload condition has subsided, and means for providing a predetermined time lag in the activation of at least one of said interrupting and said re-establishing means.

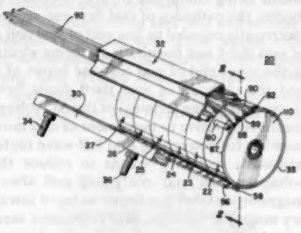
3,943,412
ELECTRICAL COMPONENT CONTAINER ASSEMBLY HAVING DETACHABLE INSTALLABLE CASES

Harry L. Wickstrom, Arlington Heights, Ill., assignor to Cook Electric Company, Morton Grove, Ill.

Continuation of Ser. No. 322,634, Jan. 11, 1973, abandoned. This application Apr. 24, 1974, Ser. No. 463,462
Int. Cl.² H05K 5/02, 7/18
U.S. Cl. 317—99 **20 Claims**

1. A container assembly having load coils, build out capacitors, or lattice networks, each of which has at least one conductor, said container assembly comprising:
a mounting track having a channel means, and
a plurality of individual cases in each of which at least one of said load coils, build out capacitors, or lattice networks

is encased and out of each of which said conductor extends, each of said cases having leg means cooperating



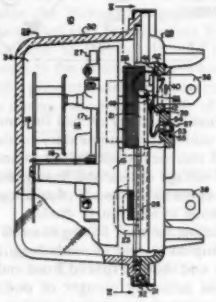
with said channel means detachably securing each case to said mounting track.

3,943,413

TAMPERPROOF EXTERNAL TEST CONTACT ARRANGEMENT FOR WATTHOUR METERS

Joseph M. Keever, Raleigh, N.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 3, 1974, Ser. No. 485,676
Int. Cl.² H02B 9/00
U.S. Cl. 317—107 **3 Claims**



1. A self-contained, detachable watthour meter subject to testing in a meter test socket of a test facility, said meter comprising;

a watthour meter movement including a metering circuit having a voltage winding for metering the consumption of electrical energy, said voltage winding including a pair of terminal ends;

a base assembly including inner and exterior sides, said inner side supporting said meter movement to define an integral meter chassis assembly, said base assembly including means for attaching the open end of a cup-shaped cover to said chassis assembly to form a protective chamber enclosing said meter movement;

plural terminal blades extending through said base assembly, said terminal blades having outer portions extending from said exterior side for detachably mounting said meter at a meter socket and inner portions extending from said inner side, one of said inner portions of one of said terminal blades being fixedly connected to one of said pair of terminal ends; and

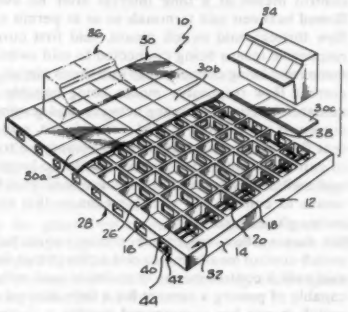
a protected testing arrangement including only one auxiliary terminal connected to the other of said pair of terminal ends and extending through said base assembly, said auxiliary terminal including an external test contact exposed at a fixed predetermined testing location on said exterior side of said base assembly for electrical connection to a testing circuit when said chassis assembly is mounted in the meter test socket, a manually releasable electrical connector means mounted on said chassis assembly adjacent said meter movement so as to be enclosed within the protective chamber when the cover is attached to said chassis assembly and having first and second mating parts, said first mating part being connected with another of said inner portions of another of said terminal blades, said second mating part being connected with said other of said pair of terminal ends, said electrical connector means being manually operable between connecting and disconnecting operative states, and conductor means extending adjacent said inner side of said base assembly and connecting an inner portion of said auxiliary terminal to said other of said pair of terminal ends of said voltage winding so that when said electrical connector means is in said disconnecting state, said another terminal blade is electrically disconnected from said voltage winding whereby said metering circuit is conditioned for testing through said external test contact at the meter test socket and when said electrical connector means is in said connecting state, said metering circuit is conditioned for metering the consumption of electrical energy.

3,943,414

ELECTRONIC SYSTEM PALLET HAVING A GIRDERED FALSE DECK

Leo C. Timmermeyer, Mobile, Ala.; Samuel Davis, Woodland Hills, and William J. Knight, Pacific Palisades, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed July 29, 1974, Ser. No. 492,601
Int. Cl.² H02B 1/20
U.S. Cl. 317—122 **8 Claims**



1. An electronic system pallet comprising:

a. a single piece support panel having an outer periphery developing a frame section and a hollow inner section, and further generally developing an obverse surface and a reverse surface,

b. a plurality of integral girder members extending between and connected to portions of said outer frame section, selected ones of said girder members having a plurality of apertures,

c. a plurality of removable panels positioned on said obverse surface,

d. at least one electronic console positioned on said obverse surface,

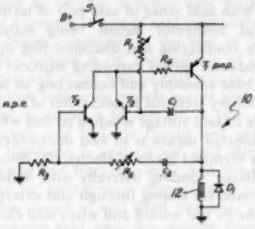
e. at least one cable for said electronic console positioned through selected ones of said apertures from said electronic console to a selected portion of said outer section, and

f. a connector junction at said selected portion of said outer section for said cable so that said cable is electrically connected from said console to said connector junction and between said obverse and reverse surfaces.

3,943,415
TIMING CIRCUIT

James P. Minear, 16705 Graham St., Huntington Beach, Calif. 92649

Filed Oct. 29, 1974, Ser. No. 518,707
Int. Cl.² H03H 9/00
U.S. Cl. 317—141 S 9 Claims



1. A timing circuit for use in supplying an electric current to a load, said current flowing between two terminals when it is supplied to said load in which the improvement comprises:

switch means for passing said current at repetitive periods, said switch means being connected in a series circuit with said load between said terminals, said switch means being capable of being electrically controlled,

switch control means for use in controlling the operation of said switch means so as to permit a current to flow between said terminals as repetitive periods, said switch control means being connected to said switch means,

first current flow responsive means for actuating said switch control means at a time interval after no current has flowed between said terminals so as to permit current to flow through said switch means, said first current flow responsive means being connected to said switch control means and being connected to said series circuit, said first current flow responsive means being capable of being actuated by current flowing between said terminals when current is not flowing in said series circuit, said first current flow responsive means being responsive to the flow of current in said series circuit so as to no longer actuate said switch control means to cause said switch control means to control said switch means so that said switch means passes a current,

other current flow responsive means connected to said switch control means and to said series circuit for causing said switch control means to maintain said switch means capable of passing a current for a time interval after said switch means has commenced passing a current as the result of the action of said first current flow responsive means.

3,943,416
ELECTROMAGNETIC SWITCHING DEVICE HAVING AN IMPROVED ENERGIZING CIRCUIT

Thomas Wayne Degenhart, Normal, Ill., assignor to General Electric Company, New York, N.Y.

Filed Dec. 18, 1974, Ser. No. 533,932
Int. Cl.² H01H 47/04
U.S. Cl. 317—154 2 Claims

1. An electromagnetic switching device comprising:

a. a stationary magnetic member;

b. a movable magnetic member in juxtaposition with said stationary magnetic member;

c. an energizing coil magnetically coupled to said stationary and movable magnetic members;

d. at least one stationary contact:

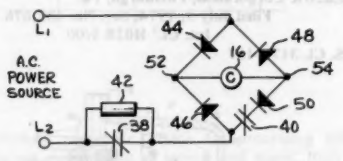
e. at least one movable contact in juxtaposition with said stationary contact and mechanically coupled to said movable magnetic member;

f. full-wave rectifying means for converting AC voltage from a source to DC voltage and applying the DC voltage across said energizing coil, said full-wave rectifying means being comprised of first, second, third and fourth diodes, the cathodes of said first and second diodes being electrically coupled to one end of said coil and the anodes of said third and fourth diodes being electrically coupled to the other end of said coil, the anode of said first diode and the cathode of said third diode being electrically connected to one terminal of the AC voltage source; and

g. means responsive to movement of said movable magnetic member for converting said full-wave rectifying means to half-wave rectifying means to reduce the applied DC voltage across said energizing coil after said movable magnetic member has begun to move toward said stationary magnetic member, said responsive means being comprised of:

i. a first normally closed momentary contact switch having an actuating plunger, said first mementary contact switch being electrically connected in series only with said first and fourth of said first, second, third and fourth diodes;

ii. a second normally closed momentary contact switch having an actuating plunger mechanically coupled to



said actuating plunger of said first momentary contact switch, said second momentary contact switch having one end electrically connected to another terminal of the AC voltage source and having another end electrically coupled to the anode of said second diode and to the cathode of said fourth diode;

iii. an actuating member having one end thereof mechanically coupled to said movable magnetic member, and another end thereof spaced from and positioned adjacent said actuating plunger of one of said first and second momentary contact switches when said coil is deenergized; and

iiii. a holding resistor electrically connected in parallel with said second momentary contact switch, whereby after said coil is energized, said movable magnetic member moves toward said stationary magnetic member and causes said actuating member to depress said actuating plunger of one of said first and second momentary contact switches to open said first and second momentary contact switches, and insert said holding resistor in series with said second diode, said energizing coil and said third diode as current passes from one terminal of the AC source to the other terminal of the AC source during each half cyclee cycle a signal from the AC source.

3,943,417
COMPRESSION TRIMMER

Vincent J. Patti, Norridge, Ill., assignor to Standex International Corporation, Andover, Mass.

Filed Feb. 11, 1974, Ser. No. 441,424
Int. Cl.² H01G 5/16
U.S. Cl. 317—249 R 36 Claims

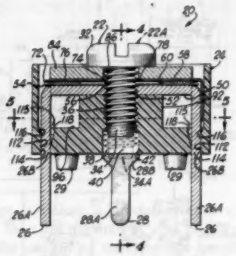
1. A variable capacitor comprising

a first conductive capacitive plate,

a second conductive capacitive plate physically spaced from and electrically insulated from said first plate,

means for varying the spacing between said first and second plates to vary the capacitance value of said capacitor, said varying means comprising a rotatable screw having an elongated threaded shank portion,

means for physically supporting said first and second plates and for resiliently biasing said screw agains rotational movement, said supporting and biasing means comprising an insulating base formed from a compliant dielectric material, said base including means receiving said threaded shank portion, said receiving means comprising

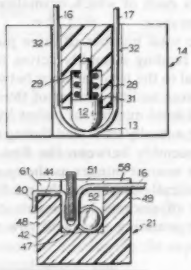


a first elongated aperture formed in said base, at least a first elongated portion of said first aperture having an inner diameter of a magnitude less than the magnitude of the outer thread diameter of said threaded shank portion prior to the receipt of said threaded shank portion to thereby enable the threaded engagement of said first elongated portion of said first aperture by said threaded shank portion and to thereby provide continuous torsional resistance to the rotational movement of said screw and to thereby prevent vibrational rotational movement of said screw during the operational life of said capacitor.

3,943,418
CORONA CHARGING DEVICE

Pham Kim Quang, Dieppe, France, assignor to La Cellophane, Paris, France

Filed Feb. 18, 1975, Ser. No. 550,726
Claims priority, application France, Mar. 8, 1974, 74.07905
Int. Cl.² H01T *19/00*
U.S. Cl. 317—262 A **11 Claims**



1. A corona charging device comprising:

a corona charging wire which is substantially U-shaped in configuration with a closed end portion and first and second legs extending therefrom;

a first insulator for supporting the closed end portion of the corona charging wire, said insulator having a projection extending therefrom which is biased against the end portion in a direction opposite the extent of said legs;

a second insulator spaced from said first insulator for supporting the legs of said corona charging wire adjacent the free ends of said legs;

a slot extending in said second insulator for receiving contact portions of said legs;

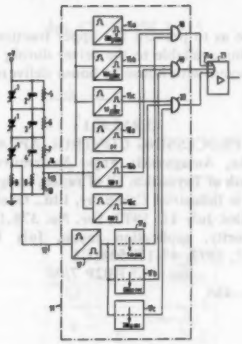
an electrical contact in said slot for engagement by said contact portions; and

means for urging said contact portions into engagement with said electrical contact.

3,943,419
PROTECTIVE DEVICE FOR AT LEAST ONE THYRISTOR

Gerd Thiele, Erlangen, Frauenaurach, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 26, 1974, Ser. No. 509,703
Claims priority, application Germany, Oct. 5, 1973, 2350233
Int. Cl.² H02H *3/28, 7/10*
U.S. Cl. 317—33 SC **12 Claims**



1. Apparatus for protecting a thyristor during its recovery time comprising:

means for generating a signal proportional to the thyristor current,

means for generating a slope signal proportional to the arising slope of the thyristor voltage,

means for generating a signal proportional to the magnitude of the thyristor voltage,

means for generating comparison signals if said current signal, slope signal, and voltage signal are each different from predetermined values, and

means responsive to said comparison signals for generating a firing pulse for the thyristor.

3,943,420
ELECTRIC VEHICLES

Malcolm Arthur Hind, Abergavenny, Wales, assignor to Crompton Electricars Limited, Wales

Filed July 26, 1974, Ser. No. 492,250
Claims priority, application United Kingdom, Aug. 17, 1973, 39016/73
Int. Cl.² H02P *5/16*
U.S. Cl. 318—139 **23 Claims**

1. An electric battery powered vehicle comprising:

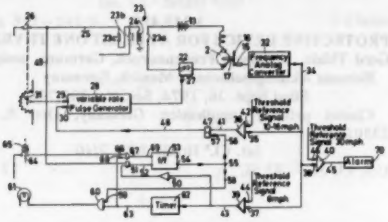
a start/variable speed controller;

manual speed range means for changing the speed range capability of the vehicle by at least one step;

an electric drive motor responsive to the setting of said start/variable speed controller and said manual speed range means to provide the desired speed of operation;

said manual speed range means including a settable manual operation and control means responsive to the setting of said manual operator for expanding the range of drive voltages applied to said drive motor by said at least one step;

wherein said control means includes delay means operative to temporarily render said control means non-responsive to the actuation of said operator upon startup of the



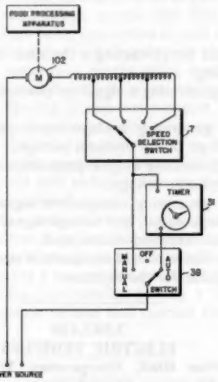
vehicle so as to prevent the upper fraction of the speed range being available to the driver during short journeys such as occur with house to house deliveries.

3,943,421

FOOD PROCESSING CONTROL APPARATUS

Morio Shibata, Amagasaki; Fujio Sawamura, and Kunio Funatsu, both of Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Company, Ltd., Osaka, Japan

Filed July 11, 1973, Ser. No. 378,133
Claims priority, application Japan, July 12, 1972, 47-70143; Nov. 7, 1972, 47-128504[U]
Int. Cl.[2] H02P 7/00
U.S. Cl. 318—484 9 Claims



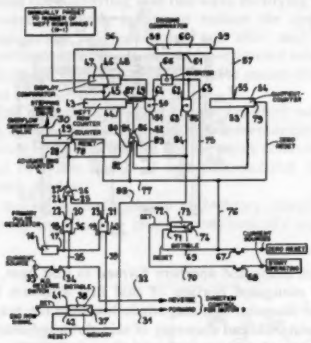
1. In a food processing apparatus having means rotatably acting on foodstuffs for processing the foodstuffs; and a motor for driving said rotatable processing means, apparatus for controlling the operation of said processing means, comprising: a selection switch for selecting one of *n*-step speeds of said motor; a rotatable indicator in the form of a prism having *n* side surfaces in parallel with the axis thereof, each of said *n* side surfaces having names of food marked thereupon which are intended to be processed at each of said *n*-step speeds of the motor; means for rotating said indicator to bring one of said side surfaces to an indication position; and means for operatively coupling said selection switch to said indicator to switch said selection switch to select the speed of the motor corresponding to the names of food marked upon the side surface of said indicator brought to said indication position.

3,943,422

METHOD AND APPARATUS FOR THE PHOTO-ELECTRICAL READING-IN WEAVING DESIGNS

Pierre Frappe, Lyon, France, assignor to Verdol S.A., Caluire, France

Filed Apr. 24, 1974, Ser. No. 463,553
Claims priority, application France, May 21, 1973, 73.19011
Int. Cl.[2] G05B 19/42
U.S. Cl. 318—568 6 Claims



1. The method of automatically moving a reading assembly to scan a rectangular coordinate weaving design pattern in the form of crossing weft rows and warp rows where the reading assembly and the pattern are advanced cyclically one with respect to the other, the advancing cycles bringing the reading head into alignment with successive weft rows by displacements within a predetermined tolerance from the center of one weft row to the center of the next weft row during each advancing cycle until the pattern has been scanned from the first weft row to the last weft row thereof, the improvement residing in displacing the reading assembly according to the following steps:

providing a series of electrical drive pulses;

coupling the drive pulses to displace the reading assembly in response to said pulses through a series of discrete increments each of which is smaller than said predetermined tolerance;

counting the total number of drive pulses required to displace the reading assembly across the pattern for a distance equal to the total distance between the center of the first weft row and the center of the last weft row;

dividing said total number of pulses by the number of weft rows to be actually traversed during said displacing of the reading assembly between the first and the last row to obtain the nearest integer as the quotient; and

then automatically displacing the reading assembly through a number of discrete increments equal to said integer after each scanning of a weft row during an advancing cycle.

3,943,423

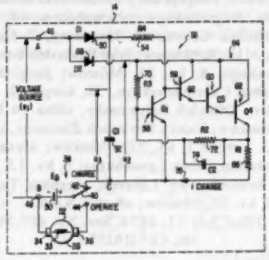
BATTERY CHARGING CIRCUIT

Philip A. Hoffman, 514 Piccadilly Road, Towson, Md. 21204

Continuation-in-part of Ser. No. 392,225, Aug. 28, 1973, abandoned. This application Feb. 21, 1974, Ser. No. 444,496
Int. Cl.[2] H02J 7/10; G05F 1/44
U.S. Cl. 320—22 12 Claims

1. A battery charger comprising a pair of battery terminals for connection to a rechargeable battery, a pair of input terminals for connection to an electrical power source, and an electrical charging circuit coupling said input terminals to said battery terminals for supplying a charging current to said battery terminals, said charging circuit comprising a switching

transister having a control electrode and a current amplifier coupled to said input terminals permitting charging current flow to said battery terminals when a conventional 60 Hz. household outlet electrical source is applied to said input terminals only during those portions of a source cycle when



the source voltage is below a predetermined voltage level substantially less than its maximum, and negative feedback means coupling the output of said current amplifier to said control electrode of said transistor whereby greater charging current flows at lower source voltage levels.

3,943,424

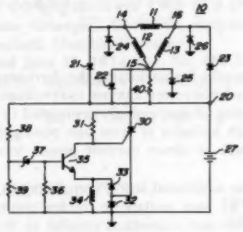
BIASING SYSTEM FOR SCR REGULATOR

Melvin Arthur Lace, Prospect Heights, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed Aug. 16, 1974, Ser. No. 498,014

Int. Cl.² H02J 7/24

U.S. Cl. 320—64 **26 Claims**



11. An Alternator-Regulator system comprising:

generator means including an output winding having a first and a second terminal and a field coil winding having a first and a second terminal;

voltage supply means;

rectification means for coupling said output winding to said supply means for charging said supply means for the voltage generated in said output winding;

voltage sensing means for monitoring the supply voltage and generating a control signal; and

regulation means for energizing said field coil in response to said control signal including, a switching device having a control terminal for receiving said control signal and a first and a second terminal having voltages applied therebetween and being substantially isolated from each other until said control signal exceeds a predetermined level whereupon said first and second terminals are substantially shorted together, and SCR having its gate connected to said first switching termminal and coupled to a source of bias potential, a series device coupled in series with said field coil at said first field coil terminal and both being energized by the SCR cathode through current being coupled first through said series device and subsequently through said field coil, said series device exhibiting a voltage drop due to the SCR through current, said second switching terminal being coupled to the junction between said series device terminal and said field coil, shunting means coupled across the series coupled device and said field coil for shunting transient voltages created by said field coil, and a field coil exciting potential being applied between the anode of said SCR and said second field coil terminal.

3,943,425

CONTROLLED SINGLE PULSE BLOCKING CONVERTER

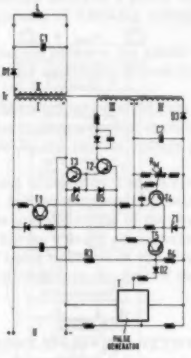
Detlef Kupka, and Alfred Oberhuber, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Apr. 4, 1974, Ser. No. 457,824

Claims priority, application Germany, Apr. 9, 1973, 2317774

Int. Cl.² H02M 3/335

U.S. Cl. 321—2 **2 Claims**



1. A single pulse blocking converter for generating a constant output voltage, comprising:

a transformer including an input winding, an output winding for providing an output voltage, a feedback winding and a measuring winding;

a switching transistor including a base, an emitter and a collector, the collector-emitter path of said switching transistor connected in series with said input winding;

a driving transistor for driving said switching transistor to conductive and blocked conditions including a base, an emitter, and a collector, the collector-emitter path of said driving transistor connected to said feedback winding and to the base of said switching transistor to supply base current thereto;

a control transistor for controlling said driving transistor including a base, an emitter and a collector, the base-emitter path of said control transistor connected to said measuring winding and the emitter-controller path connected to the base-emitter circuits of said driving and switching transistors to control the operation of said driving transistor in accordance with the voltage developed at said measuring winding which is proportional to the output voltage; and

an auxiliary circuit comprising generating means for producing periodic pulses and a further transistor including a base, an emitter and a collector, said base connected to said pulse generating means and to said collector of said switching transistor, and the collector-emitter path of said further transistor connected in parallel with the collector-emitter path of said control transistor, said further transistor operable to apply a blocking voltage to said switching transistor during the transition of said switching transistor

toward the blocked condition and remove the blocking voltage in response to a potential shift of a pulse from said generating means.

3,943,426

THYRISTOR COLUMN

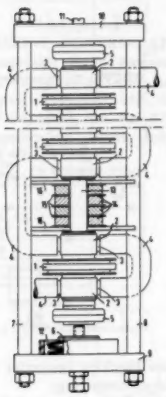
Gerd Thiele, Erlangen-Frauenaurach, and Erwin Keyl, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 12, 1974, Ser. No. 505,262

Claims priority, application Germany, Sept. 25, 1973, 2348207

Int. Cl.² H02M 7/00

U.S. Cl. 321—8 C 5 Claims



1. A thyristor column having a column axis comprising:

a first disc thyristor;

two heat sinks stacked on either side of said first disc thyristor, said heat sinks being constructed of an electrically conducting material and providing electrical connection to said first thyristor, said heat sinks and the first thyristor being arranged along said column axis;

at least a second disc thyristor;

two further heat sinks stacked on either side of said second disc thyristor, said further heat sinks being constructed of an electrically conducting material and providing electrical connection to said second thyristor, said further heat sinks and the second thyristor being arranged along said column axis;

at least one spacer element being arranged between one heat sink of said first disc thyristor and the succeeding further heat sink of said second disc thyristor;

at least one electrical conductor being arranged between said one heat sink of said first disc thyristor and the succeeding further heat sink of said second disc thyristor; and

at least one ferrite core fitting around said electrical conductor.

3,943,427

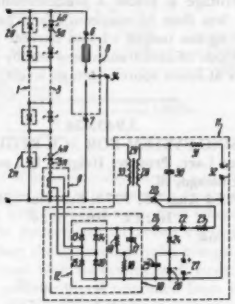
APPARATUS FOR PROTECTING THE THYRISTORS OF A HIGH-VOLTAGE CONTROLLED CONVERTER FROM OVERVOLTAGE

Jury Georgievich Tolstov, Kutuzovsky prospekt, 2/1, kv. 214, Moscow; Vladimir Efremovich Skorovarov, ulitsa Tsiolkovskogo, 2, kv. 5, Dolgoprudny Moskovskoi oblasti; Boris Ilich Grinshtein, Nagatinskaya naberezhnaya, 64, kv. 80, Moscow; Valentina Gavrilovna Stepanova, 2 Kozhevnichesky pereulok, 3, kv. 4, Moscow; Ivan Pavlovich Bashkatov, ulitsa Lobachevskogo, 8, kv. 21, Moscow; Jury Danilovich Vinitsky, ulitsa Chertanovskaya, 39, korpus 2, kv. 56, Moscow; Valery Ottovich Balyasinsky, ulitsa 14 Parkovaya, 6, kv. 24, Moscow; Valery Pavlovich Zhmurov, ulitsa Vvedenskogo, 13, korpus 1, kv. 321, Moscow; Alexandr Venediktovich Natalkin, ulitsa Lavochkina, 8, kv. 13, Moscow, and Grigory Bentsionovich Lazarev, pereulok Tashkentsky, 5, korpus 3, kv. 35, Moscow, all of U.S.S.R.

Filed July 11, 1974, Ser. No. 487,796

Int. Cl.² H02M 1/18

U.S. Cl. 321—11 4 Claims



1. An apparatus for protecting the thyristors of a high-voltage controlled converter against overvoltage, the thyristors forming a string of successively connected thyristor modules each of which includes at least one power thyristor, for instance, for use in direct current power transmission lines, comprising:

at least one additional string comprising at least one bank formed by two avalanche diodes connected in series opposition and connected parallel to the string of thyristor modules;

said additional string limiting the value of voltage applied to the thyristor modules; and

at least one surge arrestor adapted to be controlled by the signals from a current sensor, with the input thereof connected in the circuit of said additional string;

said controlled surge arrester limiting, in accordance with signals from the current sensor, the value of voltage across the additional string in case of overvoltage.

3,943,428

DC TO DC VOLTAGE CONVERTER

James R. Whidden, Baldwinsville, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Continuation-in-part of Ser. No. 418,236, Nov. 23, 1973, abandoned. This application Dec. 13, 1974, Ser. No. 532,367

Int. Cl.² H02M 7/00

U.S. Cl. 321—15 14 Claims

1. A DC to DC voltage converter for use with a load which is also responsive to an AC source comprising:

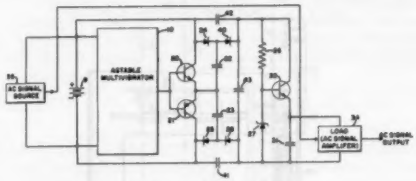
pulse generator means;

gating means coupled to said pulse generator means;

first and second charge storage means coupled to said gating means, said gating means furnishing a current path to

said first charge storage means in response to a positive-going change in voltage produced by said pulse generator means and furnishing a current path to said second charge storage means in response to a negative-going change in voltage produced by said pulse generator means;

output circuit means connected in series with said first and second charge storage means, said output circuit means including voltage regulator means, said first and second charge storage means being connected in series-aiding relationship;



capacitance means coupling said output circuit means to said pulse generating means; and

unidirectional conducting means coupling said first charge storage means to said voltage regulator means and poled so as to be reverse-biased each time said gating means furnishes a current path to said first charge storage means and thereby prevent said capacitance means from discharging through said unidirectional conducting means at said time.

3,943,429

METHOD AND APPARATUS FOR OPERATING AN INVERTER CONSISTING OF TWO SUB-INVERTERS

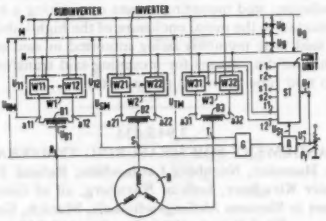
Konrad Heintze, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed June 27, 1974, Ser. No. 483,538

Claims priority, application Germany, July 13, 1973, 2335713

Int. Cl.² H02M 7/00

U.S. Cl. 321—26 **17 Claims**



1. A method of operating an inverter comprising two sub-inverters whose inputs are connected to a DC voltage source and whose outputs are connected together through a choke having a center tap where the AC output voltages of the sub-inverters shifted relative to each other by an adjustable control angle are combined through the choke to form a resultant voltage which is available at the center tap, comprising the steps of:

a. reversing the two AC output voltages within a reversal portion defined as the range of the control angle during which the two voltages have opposite polarity; and

b. carrying out said reversal at least once at each reversal portion in such a manner that both voltage are reversed simultaneously and in opposite directions.

3,943,430

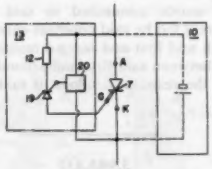
CIRCUITRY FOR REDUCING THYRISTOR TURN-OFF TIMES

Masayoshi Kumano, Amagaski, Japan, assignor to Mitsubishi Denki Kabushi Kaisha, Tokyo, Japan

Filed June 20, 1974, Ser. No. 481,186

Int. Cl.² H02M 3/135

U.S. Cl. 321—45 C **11 Claims**



1. A circuit comprising:

a thyristor connected between a power source and a load having the function of blocking voltage in the reverse direction;

first means connected between the anode and the cathode of the thyristor for applying a reverse voltage to the thyristor;

second means connected between the gate and the anode of the thyristor for causing a reverse current flow in the gate of the thyristor by the reverse voltage provided by said first means;

said second means comprising a series circuit of an impedance means and an auxiliary thyristor connected between the gate and the anode of the thyristor, the auxiliary thyristor having a diode characteristic in the reverse direction and being operable in the direction allowing a reverse current to flow in the gate of the thyristor.

3,943,431

CURRENT-SPLITTING NETWORK

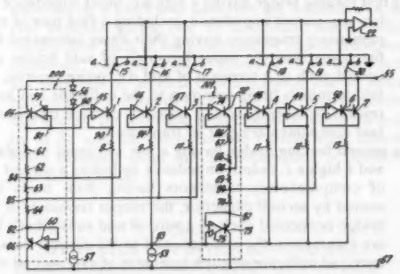
Kyuichi Hareyama, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Dec. 20, 1974, Ser. No. 534,797

Claims priority, application Japan, Dec. 28, 1973, 49-2497

Int. Cl.² H02P 13/16; H02J 1/00

U.S. Cl. 323—1 **3 Claims**



1. A current splitting network comprising a reference point, a voltage divider having a reference terminal connected to said reference point and first and second output terminals and generating a first voltage at said first output terminal and a second voltage at said second output terminal, said first voltage having a first value with respect to the potential of said reference point and said second voltage having a second value with respect to the potential of said reference point, said first and said second values having a predetermined ratio to one

another, a first resistor, a first amplifier coupled between one end of said register and said first output terminal for holding the voltage at said one end of said first resistor substantially at said first voltage, a second resistor of a resistance value having a predetermined ratio to the resistance value of said first resistor, a second amplifier coupled between one end of said second resistor and said second output terminal for holding the voltage at said one end of said second resistor substantially at said second voltage, the other ends of said first and second resistors being connected to said reference point, and a constant current source connected to said reference point, whereby a current fed by said constant-current source is split to flow through said first and second resistors in accordance with the ratio between said first and second voltages and the ratio between the resistance values of said first and second resistors.

3,943,432

ELECTRONIC FEEDING BRIDGE

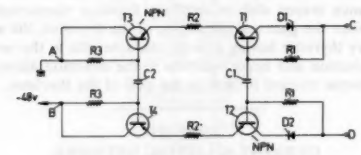
Jöel Serge Colardelle, Creteil; Marie-Helene Comte, Jouy-en-Josas, and Marc Andre Regnier, Aulnay-sous-Bois, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Sept. 12, 1974, Ser. No. 505,300

Claims priority, application France, Dec. 10, 1973, 73.43915

Int. Cl.² H04M *19/00*

U.S. Cl. 323—7 2 Claims



1. An electronic circuit for supplying electrical power from a d.c. power source to a subscriber's telephone line comprising:

a first feeding bridge having a high a.c. input impedance and low a.c. output impedance, including a first pair of complimentary transistors having their bases connected by a first capacitor, the input terminals of said bridge connected each to a terminal of said d.c. power source, and said terminals being common to the collector and to the resistor between base and collector of each transistor of said complimentary pair of transistors;

a second feeding bridge having a low a.c. input impedance and a high a.c. output impedance including a second pair of complimentary transistors having their bases connected by second capacitor, the output terminals of said bridge connected each to a wire of said subscriber's line, are common to the collector and to the resistor between base and collector of each transistor of said second complimentary pair of transistors, and

the output of said first pair of complimentary transistors being connected to the input of said second pair of complimentary transistors by resistive coupling between the corresponding emitters, whereby

the combination of said first and second feeding bridge provides high impedance to a.c. signals originating in said d.c. power source and on said subscriber line, to isolate the flow of a.c. signals between said d.c. power source and said subscriber's line and between said subscriber's line and said d.c. power source.

3,943,433

MEASURING TRANSFORMER ARRANGEMENT FOR A HIGH-VOLTAGE INSTALLATION CARRYING SEVERAL CONDUCTORS

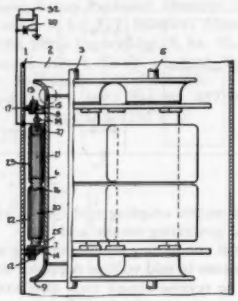
Wolfgang Hermstein, Nurnberg, and Heinz Schiemann, Berlin, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 17, 1974, Ser. No. 471,018

Claims priority, application Germany, May 17, 1973, 2325451

Int. Cl.² H01F *27/06;* H01B *9/06*

U.S. Cl. 323—44 R 66 Claims



1. A measuring transformer arrangement for a metal-encapsulated, fluid-insulated, high-voltage installation equipped with a plurality of conductors comprising: a plurality of tube members disposed in surrounding relation to corresponding ones of the conductors, each of said tube members having an inner surface portion facing the conductor disposed therein, said surface portion having a value of electrical conductivity selected from a conductivity value in the range extending from the value of electrical conductivity of a semiconductor to the value of electrical conductivity of metal; a plurality of transformer core units corresponding to said tube members, respectively, each of said transformer core units including an iron core, and a secondary winding system mounted on said core; mounting means for mutually connecting said tube members and for mounting said tube members on the metal encapsulation, said mounting means comprising a supporting disc mounted to the metal enclosure of the high-voltage installation, said tube members being mounted in said supporting disc; and, holding means for mounting said transformer core units to said tube members respectively.

3,943,434

ARRANGEMENT FOR MEASURING TEMPERATURES

Jochen Haeusler, Nurnberg-Laufamholz; Roland Horn, and Werner Kirschner, both of Nurnberg, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 6, 1974, Ser. No. 440,049

Claims priority, application Germany, Feb. 14, 1973, 2307296

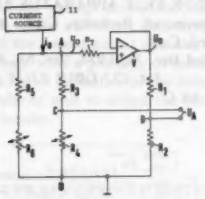
Int. Cl.² G01K *7/24*

U.S. Cl. 323—69 4 Claims

1. An improved bridge circuit for providing a temperature dependent output comprising:

a. a first bridge branch made up of the parallel combination of two series circuits, one series circuit including a first constant resistor and a first temperature dependent resistor and the other a second constant resistor and a second temperature dependent resistor with the constant resistors coupled together to form one terminal of the bridge branch and the ends of the two temperature resistances coupled together to form a second terminal of the bridge branch;

b. a second bridge branch comprising third and fourth constant resistors in series;
c. means coupled to said first terminal impressing a constant current through said first bridge branch;
d. a current sink coupled to said second terminal;
e. means coupling the voltage at said first terminal to one side of said second bridge branch; and

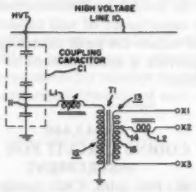


f. means coupling said current sink to the other side of said second bridge branch, whereby the voltage developed between the junction of said third and fourth resistors in said second branch and the junction between a constant resistor and a temperature dependent resistance in one of said series circuits in said first branch will be a voltage which is temperature dependent.

3,943,435
TRANSFORMER HAVING IMPROVED VOLTAGE AND PHASE CHARACTERISTICS

Malcolm B. DeJarnette, Rustburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Aug. 12, 1974, Ser. No. 496,373
Int. Cl.² H02P *13/00;* **G05F** *1/68*
U.S. Cl. 323—76 **3 Claims**

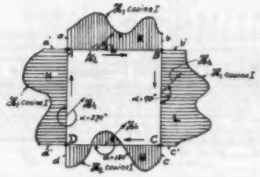


1. For use with a coupling capacitor voltage transformer, a potential transformer, or the like having a primary winding adapted to be connected to a source of alternating electrical voltage, and a secondary winding structure coupled to said primary winding, said secondary winding structure having a relatively high leakage reactance portion and a relatively low leakage reactance portion; an improved arrangement comprising: an inductor adapted to be connected to the low leakage reactance voltage portion, said inductor having a magnitude such that the leakage reactance of the high leakage reactance voltage portion referred to the primary winding is substantially the same as the leakage reactance of the low leakage reactance voltage portion referred to the primary winding.

3,943,436
LINE INTEGRAL METHOD OF MAGNETO-ELECTRIC EXPLORATION

Sylvain J. Pirson, and Jacques E. Pirson, both of 8608 Mesa Drive, Austin, Tex. 78759

Filed Jan. 21, 1974, Ser. No. 435,120
Int. Cl.² G01V *3/00, 3/08*
U.S. Cl. 324—8 **14 Claims**



1. A method of locating oil, gas, minerals, or geothermal energy deposits comprising the steps of:
a. measuring the total earth magnetic field intensity H_t at a plurality of stations numbered from 1 to n and forming a closed traverse around an area to be investigated
b. evaluating the line-integral LI defined by

$$LI = \sum_{1 \to 2}^{n \to 1} H_t \cdot ds \cdot \text{cosine } \alpha$$

along said traverse, wherein ds is an elementary length of the traverse, α is the angle between H_t and ds and

$$\sum_{1-2}^{n-1}$$

denotes the algebraic summation of n terms of the form H_t. ds. cosine α evaluated in the series of intervals 1–2, 2–3, ... $(n-1)$–n, n–1,
c. correlating the value of LI to the presence or absence of the deposits sought on the basis of its magnitude and its sign, positive values of LI evaluated along the closed traverses in a clockwise direction are indicative of mineral deposits giving rise to downward electro-telluric current flow such as are generated by hydrocarbon accumulations, whereas negative values of LI are indicative of the presence of mineral deposits giving rise to upward electro-telluric currents such as are generated by geothermal energy, the aforesaid relationship between the polarity of LI and the electrotelluric current flow direction being reversed when the line integration is performed counterclockwise.

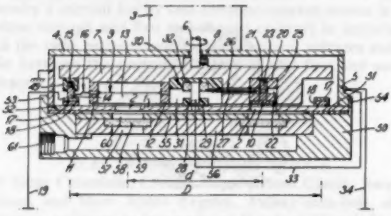
3,943,437
APPARATUS FOR INVESTIGATING THE ELECTROSTATIC PROPERTIES OF POWDERS

Marcel Mourier, Lyon, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Jan. 20, 1975, Ser. No. 542,269
Claims priority, application France, Jan. 21, 1974, 74.01915
Int. Cl.² G01R *29/12, 5/28*
U.S. Cl. 324—32 **3 Claims**

1. Apparatus for measuring the electrostatic properties of materials, said apparatus comprising, in combination:
a. a first fixed plate;
b. a rotor mounted to rotate about an axis perpendicular to said fixed plate;

c. means defining openings in said fixed plate, the openings lying along the circumference of a circle, the center of said circle lying on said axis of said rotor;
d. an electrode and a probe fixed to said rotor and spaced apart from one another and positioned whereby both the electrode and the probe separately overlie each of said openings in turn when the rotor rotates;
e. means for charging said electrode;
f. means for detecting the charge on said probe, thereby detecting the charge on said materials;



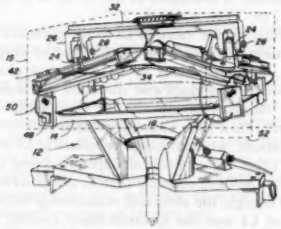
g. a second fixed plate having means to hold it against said first fixed plate;
h. means defining material containing cavities in said second fixed plate at locations overlying the openings in said first fixed plate;
i. at least one porous element at the bottom of each said cavity; and
j. means for sucking air at the bottom of the said cavities through said porous elements thereby holding said materials contained in said cavities against displacement.

3,943,438

APPARATUS FOR TESTING A HERMETIC SEAL IN A GLASS CATHODE RAY TUBE

Howard H. Barber, and Thaddeus J. Hajduk, both of Chicago, Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Nov. 18, 1974, Ser. No. 524,609
Int. Cl.² G01R *31/12, 31/16, 31/22;* **H01J** *9/42*
U.S. Cl. 324—54 **5 Claims**



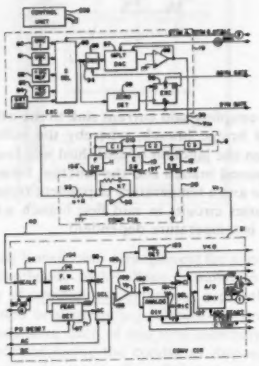
1. For use in the manufacture of a cathode ray tube an apparatus for testing a hermetic, glass-like, frit seal between the funnel and the faceplate of an in-process cathode ray tube wherein the inside of said funnel has a conductive coating adapted to receive a test voltage applied to an anode button on a wall of said funnel, and wherein a discontinuity in the hermetic seal causes a high voltage breakdown in the seal, said apparatus comprising:
an electrically conductive elastomeric band capable of being stretched over the tube so as to conform to said hermetic seal between said funnel and faceplate;
means for supporting and locating said cathode ray tube in a position to be tested;
band mounting means for holding said elastomeric band and for stretching said elastomeric band to a rectangular stretched configuration larger than the size of the faceplate of the tube to be tested, and for relaxing the band such that it makes a static fit around hermetic seal on said tube and conforms intimately to said seal to make an uninterrupted electrical and mechanical engagement therewith; and
means for applying a test voltage across the hermetic seal of said cathode ray tube between said conductive coating and said band.

3,943,439

CAPACITOR TEST APPARATUS AND METHOD

Douglas W. Raymond, Berkeley, Calif., assignor to Zehntel, Inc., Concord, Calif.

Filed Dec. 30, 1974, Ser. No. 537,253
Int. Cl.² G01R *27/26*
U.S. Cl. 324—60 C **14 Claims**



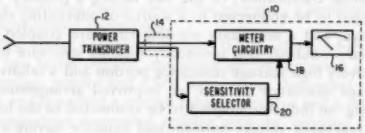
1. An apparatus for measuring the capacitance of a capacitor under test comprising:
exciter circuit means for providing a time-varying excitation signal,
computing circuit means including an amplifier having a summing junction connected to the capacitor under test, said computing circuit means responsive to said excitation signal for producing a measurement signal as a function of the capacitance of said capacitor,
peak detector means for peak detecting said measurement signal to provide a measurement of the capacitance of said capacitor.

3,943,440

SENSITIVITY CODING CIRCUIT FOR AN ELECTRONIC INSTRUMENT

Allen P. Edwards, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 3, 1974, Ser. No. 511,908
Int. Cl.² G01R *21/04, 15/08*
U.S. Cl. 324—95 **5 Claims**



1. A transducer sensitivity coding circuit for an electronic instrument having measurement circuits and a remote trans-

ducer unit connected to the electronic instrument by a cable, the electronic instrument employing different transducers for different measurement ranges, the transducer sensitivity coding circuit automatically providing information to the electronic instrument of the transducer sensitivity comprising:

a fixed value resistor mounted in the transducer unit having a value indicative of the sensitivity of a particular transducer unit;

a current supply circuit in the electronic instrument connected to the cable for supplying a current to the resistor to develop a resistor voltage across the resistor; and

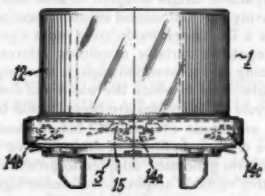
comparator means in the electronic instrument, connected to the cable and the measurement circuits, for comparing the resistor voltage with a plurality of reference voltages for producing a signal indicative of the value of the resistor in the transducer unit to adjust the sensitivity of the measurement circuits.

3,943,441

TAMPER-RESISTANT ELECTRICAL METER HOUSING

Ernest B. Shackford, Durham, N.H., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 22, 1975, Ser. No. 543,282
Int. Cl.² G01R *1/04;* **H02B** *9/00*
U.S. Cl. 324—110 **4 Claims**



1. A tamper-resistant electrical meter housing including a rotatable cover assembly cooperable with a matable base to enclose a meter supportable on the base wherein:

a. said base includes a rim having a recess positioned on a top surface of said rim;

b. said cover assembly includes a cover and a ring secured to said cover;

c. means for mating said base with said cover assembly upon relative turning movement of said base and said cover assembly;

d. a concealed locking means coupled to said cover assembly and receivable in said recess to prevent turning movement of said cover assembly relative to said base, thereby preventing unauthorized removal of said cover assembly from said base.

3,943,442

METHOD AND APPARATUS FOR MEASUREMENT OF TRAP DENSITY AND ENERGY DISTRIBUTION IN DIELECTRIC FILMS

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, Joseph Maserjian, La Crescenta, Calif.

Filed Nov. 11, 1974, Ser. No. 522,551
Int. Cl.² G01R *29/00, 31/00*
U.S. Cl. 324—158 R **10 Claims**

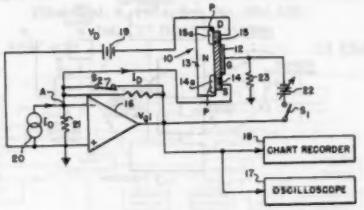
1. A method of determining trap densities in a dielectric film comprised of the steps of

incorporating said dielectric film as an insulator between a layer of metal and a semiconductor substrate,

incorporating said metal-insulator-semiconductor structure in an insulated-gate, field-effect transistor by using said metal layer as a gate electrode, and providing spaced apart ohmic contacts to regions doped opposite to said semiconductor substrate to serve as source and drain contacts,

applying bias voltage to said source and drain contacts for current to flow through a channel of said semiconductor layer between said source and drain contacts,

applying a bias voltage to said gate electrode, thus causing carriers to tunnel into traps in said dielectric film to



create a space charge that tends to cause a change in conductance of said channel, and

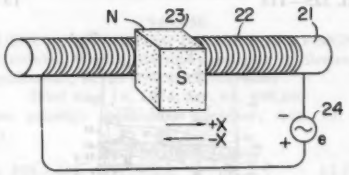
detecting said change of injected space charge by measuring the change in relationship between channel conductance and gate bias voltage applied as a function of time to determine trap density as a function of distance from the dielectric-semiconductor interface.

3,943,443

SPEED DETECTORS

Koya Kimura, and Kunitaka Maeda, both of Numazu, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1974, Ser. No. 463,179
Claims priority, application Japan, Apr. 26, 1973, 48-47751
Int. Cl.² G01P *3/46;* **H02K** *35/00*
U.S. Cl. 324—163 **7 Claims**



1. In a speed detector for detecting the speed of a moving body, said detector being of the type comprising a core of magnetic material having uniform cross-section, a detection coil uniformly wound about said core, a magnet positioned with one pole thereof faced to the periphery of said detection coil with a definite air gap therebetween, and means operatively connected to a moving body for relatively moving said magnet with respect to said core and coil in accordance with the movement of said moving body, the improvement wherein:

said magnet is positioned such that the magnetic flux produced thereby crosses said detection coil two times, comprising means for inducing a direct current voltage in said detection coil having a magnitude proportional to the speed of movement of said moving body and a polarity depending upon the direction of movement thereof.

3,943,444

PROCEDURE TO WATCH SEVERAL RADIO CHANNELS AT RADIO COMMUNICATION

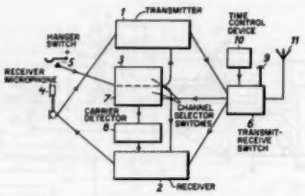
Karl Bengt Hakan Lundberg, Lidingo, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Dec. 4, 1974, Ser. No. 529,395

Claims priority, application Sweden, Dec. 21, 1973, 7317372

Int. Cl.² H04B 1/40

U.S. Cl. 325—25 6 Claims



1. In a radio communication system having a plurality of transmitting and receiving stations and a plurality of radio channels which are intended for the transmission of selective calls, the method, while a communication is occurring between a transmitting station having a transmitter and a receiver and a receiving station, having a transmitter and a receiver performed by the transmitting station of watching for calls to the transmitting station on any of a plurality of selected radio channels on which calls are expected, said method comprising the steps of sequentially tuning the receiver of the transmitting station to each of the plurality of selected radio channels and sensing for signals on the selected radio channels for a given period of time whenever the transmitting station is switched from the transmit to receive mode.

3,943,445

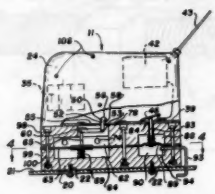
APPARATUS FOR SIGNALLING POSITION OF DOWNED AIRCRAFT

Edward F. Dawson, 2052 Comox Ave., Comox, British Columbia, Canada (V9N 4A5)

Filed Apr. 8, 1974, Ser. No. 458,848

Int. Cl.² H04B 1/02

U.S. Cl. 325—115 13 Claims



1. Signalling apparatus for attachment to aircraft and operable when the aircraft crashes, comprising a buoyant container exposed to atmosphere and having therein signalling means and a self-contained electrical operating system therefor, switch means in said electrical operating system normally rendering said system inoperative, a base mountable on an aircraft at an outer surface thereof, latch means releasably securing the container to the base, operating means including a diaphragm mounted in said base and connected to said latch means, means to admit water into the base when the portion of the craft on which the base is mounted is submerged in water whereby hydrostatic pressure in the base and against said operating means causes the latter to operate said latch means to release the container and permit the latter to float to the surface, and an operator for the switch means for causing said switch means to permit the electrical system to operate when the container floats away from the base.

3,943,446

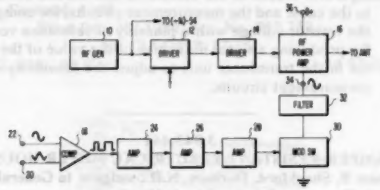
POWER AND MODULATION CONTROL SYSTEM

Vaughn L. Quidort, Lochearn, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 30, 1974, Ser. No. 510,827

Int. Cl.² H04B 1/04

U.S. Cl. 325—144 12 Claims



1. A system for controlling the power output of a transmitter in response to the operation of a modulation switch turned on and off by a pulse width modulated substantially square wave, comprising in combination:

a. a comparator circuit coupled to said modulation switch and having first and second inputs respectively coupled to receive a DC biased modulating input signal and a regularly repetitive variable amplitude reference signal and producing said substantially square wave signal consisting of a pulse train in which the width and consequently the duty cycle of the pulses are proportional to the instantaneous amplitude of said DC biased modulating signal relative to the amplitude of the reference signal;

b. a waveform generator, adapted to produce said regularly repetitive variable amplitude reference signal of a predetermined frequency, coupled to said second input of said comparator circuit, said waveform generator being operable in response to an initiating signal of said predetermined frequency and additionally receiving a control signal which is adapted to vary the amplitude of said reference signal;

c. first circuit means responsive to the power output of said transmitter to generate at least a first signal indicative of the power output of said transmitter;

d. second circuit means responsive to an external signal to generate at least a desired power output signal indicative of the desired power output of said transmitter; and

e. combining circuit means for combining a plurality of signals to generate said control signal, said plurality of signals including at least said signal indicative of the power output of said transmitter and said desired power output signal, said control signal being coupled to said waveform generator such that the power output of said transmitter is controlled at the desired level.

3,943,447

METHOD AND APPARATUS FOR BI-DIRECTIONAL COMMUNICATION VIA EXISTING CATV SYSTEM

Glen Keller Shomo, III, Harrisonburg, Va., assignor to Comsonics, Inc., Harrisonburg, Va.

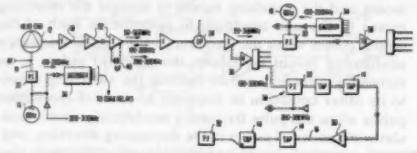
Continuation-in-part of Ser. No. 405,210, Oct. 10, 1973, abandoned. This application Oct. 8, 1974, Ser. No. 513,023

Int. Cl.² H04B 3/56

U.S. Cl. 325—308 10 Claims

1. A method for implementing ancillary communications between two or more points linked by a CATV coaxial cable system including a transmitting antenna site, a plurality of remote subscriber sites, coaxial cable means linking the transmitting/antenna site to each of the subscriber sites, a plurality of active and passive circuit components connected in the

cable means to implement r.f. signal amplification, signal branching, etc., and at least one alternating current power supply source coupled to the cable means to supply electrical operating power to the active circuit components, said CATV coaxial cable system including at least one input station and at least one output station remotely located from one another at respective ones of said points, said method utilizing a frequency window of 10–300 KHz in said CATV coaxial cable system and comprising the steps of:



a. generating a communications signal in the frequency band from 10–300 KHz,

b. coupling the communications signal to the coaxial cable means at said input station, said communications signal being bi-directionally propagated over the path followed by the power supply signal and by-passing those circuit components which implement r.f. signal amplification, and

c. receiving the communications signal at said output station on the coaxial cable means.

3,943,448

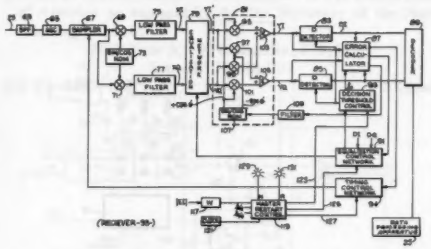
APPARATUS AND METHOD FOR SYNCHRONIZING A DIGITAL MODEM USING A RANDOM MULTILEVEL DATA SIGNAL

David M. Motley, Santa Ana, and King Y. Cheng, Tustin, both of Calif., assignors to Hycom Incorporated, Irvine, Calif.

Filed Sept. 11, 1974, Ser. No. 504,860

Int. Cl.² H03K 9/00

U.S. Cl. 325—321 **12 Claims**



5. A receiver for receiving an analog input signal comprising:

adjustable means for adapting a plurality of characteristics of the receiver to the characteristics of the input signal, said receiver characteristics including phase, equalization, and timing characteristics;

error calculator means for providing a system error signal which is related to the degree to which the characteristics of the receiver are adapted to the characteristics of the input signal;

signal generation means responsive to the system error signal for providing a quality signal which is related to the value of the system error signal over an interval of time;

first means responsive to the quality signal being within a first range of values for holding the equalization and timing characteristics of the receiver against adjustment and adjusting the phase characteristic of the receiver; and

said first means including means responsive to the quality signal being within said first range of values after a first period for adjusting the timing characteristics of the receiver and then holding said equalization and timing characteristics against adjustment and adjusting the phase characteristic.

3,943,449

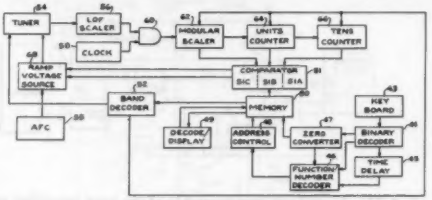
MULTI-SPEED RAMP FOR A VARACTOR TUNING SYSTEM

Melvin C. Hendrickson, Elmhurst, and Richard G. Merrell, Darien, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Sept. 9, 1974, Ser. No. 504,638

Int. Cl.² H04B 1/16

U.S. Cl. 325—420 **11 Claims**



1. A tuning control system, comprising:

a tuner having a varactor diode tunable element operable in a frequency band containing a plurality of receivable signals;

tuning frequency counting means for determining from the frequency of said tunable element information identifying the corresponding receivable signal;

signal selection means;

comparison means coupled between said tuning frequency counting means and said signal selection means for determining the difference between information from said signal selection means and information from said tuning frequency counting means; and

ramp voltage driving means, coupled between said tunable element and said comparison means for impressing a ramp tuning voltage at a variable rate dependent upon said difference across said varactor diode to change the frequency of said tuner at a rate based upon said difference.

3,943,450

FREQUENCY CONVERTING DEVICE FOR RF SIGNALS

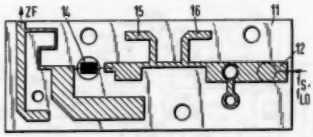
Klaus Otremba, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Aug. 19, 1974, Ser. No. 498,605

Claims priority, application Germany, Aug. 23, 1973, 2342671

Int. Cl.² H04B 1/26

U.S. Cl. 325—446 **12 Claims**



1. In a frequency converting device for a receiver, particularly in hollow conductor, strip line and micro strip techniques, including signal and oscillator input means, a diode as a non-linear element, an input line connecting said input means and said diode, an intermediate frequency output, and blocking circuits in the proximity of the diode for oscillations of the second harmonic of the oscillator frequency as well as the summation frequency of the oscillator frequency and the signal frequency, said blocking circuits comprising a pair of filter elements, each having a length of approximately (λ/4)

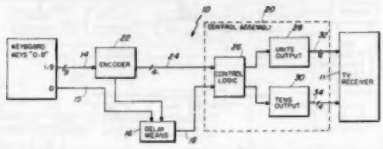
connected to the input line, said elements being spaced a distance of approximately ($\lambda/4$) apart, for effecting a current blockage of currents of the second harmonic of the oscillator frequency and the summation frequency of the signal frequency and oscillator frequency, at the diode.

3,943,451

TV CHANNEL SELECTOR ASSEMBLY

James C. Stoddard, Wayland, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed June 26, 1975, Ser. No. 590,752
Int. Cl.² H03J *5/04*
U.S. Cl. 325—464 **13 Claims**



1. A TV channel selector assembly of the type providing an output to a TV receiver, the output effective to select any VHF or UHF channel, including:

a. a keyboard having ten keys each of which corresponds to one of the decimal numbers zero through nine inclusive, the keyboard providing a defined output corresponding to the particular one of the keys which is activated,

b. delay means responsive to the activation of any key for defining a first timed interval commencing after the activation of any key, and

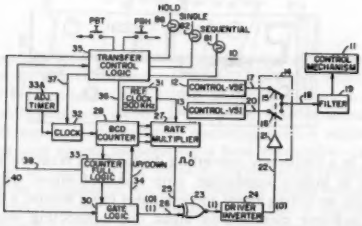
c. control means responsive to the keyboard output and the delay means for allocating the keyboard output as a units channel if a second key activation does not occur during the timed interval and for allocating the keyboard output as a tens channel if a second key activation occurs during the timed interval, the second key activation forming a second keyboard output which is allocated as a units channel, the assembly selecting and changing channels by activating the numbered keys corresponding to the desired channel.

3,943,452

FREQUENCY MODULATION TRANSFER SYSTEM AND METHOD

William E. Zitelli, Media, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 27, 1975, Ser. No. 544,603
Int. Cl.² H03K *17/28*
U.S. Cl. 328—71 **9 Claims**



1. A system for transferring the operation of an electrically operable mechanism from one to the other of two control signals over a predetermined length of time with a minimum effect on the mechanism, said system comprising

a pulse generating means having at least one output for producing at said one output a series of pulses,

means connected to the pulse generating means to modulate the frequency of the pulses in both an increasing and decreasing direction during the transfer,

switching means to conduct one of the control signals only to the mechanism when operated to one condition and to conduct the other of the control signals only to the mechanism when operated to the other condition,

means connected to the output of the pulse generating means and the switching means to control the switching means to the one condition in response to each of the output pulses when the frequency of the pulse frequency modulating means modulates the series of pulses in an increasing direction and to operate the switching means to its other condition in response to each of the output pulses when the pulse frequency modulating means modulates the series of pulses in the decreasing direction, and

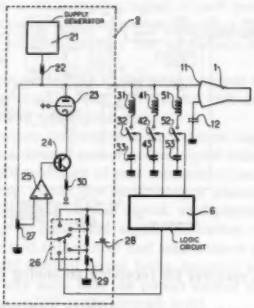
filtering means connected to the output of the switching means to average the frequency modulated control signals.

3,943,453

HIGH VOLTAGE RAPID SWITCHING CIRCUIT

Gerald Melchior, Paris, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, France

Filed Feb. 20, 1974, Ser. No. 444,190
Claims priority, application France, Feb. 20, 1973, 73.05915
Int. Cl.² H03K *17/00*; **G11C** *11/26*
U.S. Cl. 328—123 **6 Claims**



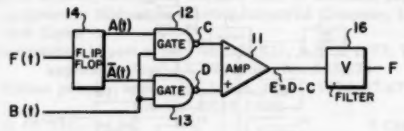
1. A high voltage rapid switching circuit for switching a voltage applied to a charged element having a particular electrical capacity between n different levels comprising switchable voltage generator means connected to said charged element for supplying n levels of d.c. high voltage, starting-up circuit means for connection to said charged element to form at least one oscillating circuit therewith for switching the potential of said charged element with respect to ground to one of said n levels of d.c. high voltage, and logic circuit means for controlling said switchable voltage generator means and said starting-up circuit means to the same of said n levels of d.c. high voltage.

3,943,454

DIGITAL LOGIC CIRCUITS FOR PRODUCING DIGITAL SUM AND DIFFERENCE FREQUENCIES

Lawrence E. Getgen, Redwood City, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Feb. 19, 1974, Ser. No. 443,569
Int. Cl.² G06G 7/16; H03K 5/20, 7/06
U.S. Cl. 328—133 22 Claims



1. Apparatus for obtaining a signal having a frequency component equal to the algebraic sum of the fundamental frequencies of a pair of logic signals, A(t) and B(t), comprising:

means for deriving the complement of the true form of at least one of said pair of logic signals, whereby true and complementary forms of the signal are available;

combining means, including means for logically combining in selected pairs true and complementary forms of said pair of logic signals, the combining means providing at its output the sum and difference of the fundamental frequencies of said logic signals in digital form; and

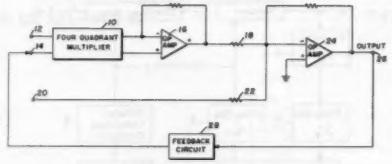
selecting means having an output, and having an input connected to the output of the combining means, said selecting means providing at its output either the sum or the difference frequency.

3,943,455

ANALOG FEEDBACK AMPLIFIER EMPLOYING A FOUR-QUADRANT INTEGRATED CIRCUIT MULTIPLIER AS THE ACTIVE CONTROL ELEMENT

Thomas H. Bladen, Adelphi, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 3, 1974, Ser. No. 475,541
Int. Cl.² H03B 3/04
U.S. Cl. 328—155 3 Claims



1. An analog feedback circuit comprising:

a four quadrant multiplier for receiving a first ac analog voltage input signal and a dc control voltage input signal and supplying an output signal;

a first summing resistor for receiving said multiplier output signal and providing an analog output therefrom;

a second summing resistor for receiving a second analog voltage input signal of either in-phase or 180° out-of-phase relationship with said first analog voltage input signal and for providing an analog output therefrom;

means for summing said outputs from said first and second summing resistors; and

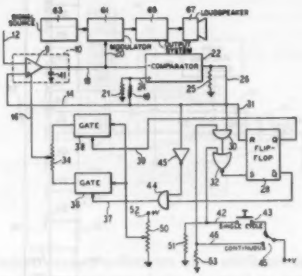
feedback circuit means coupled between said summing means and said dc control input for continously providing a nulled or zero output from said summing means by controlling said dc control voltage input signal.

3,943,456

SIGNAL GENERATOR FOR ELECTRONIC MUSICAL INSTRUMENT, EMPLOYING VARIABLE RATE INTEGRATOR

David A. Luce, Clarence Center, N.Y., assignor to Moog Music, Inc., Williamsville, N.Y.

Filed June 14, 1974, Ser. No. 479,486
Int. Cl.³ G10H 1/00; H03K 4/10; G06G 7/18
U.S. Cl. 328—185 11 Claims



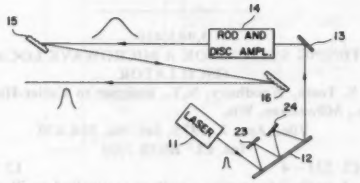
1. A signal generator comprising integrator means, comparator means connected to said integrator means and responsive thereto for producing two discrete output voltage levels on a single output line in response to a comparison of the output of said integrator means with a certain value, and connecting means connecting said line to said integrator for controlling the sign of the rate of change of the output of said integrator.

3,943,457

OPTICAL PULSE COMPRESSION AND SHAPING SYSTEM

Robert H. Lehmberg, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 16, 1974, Ser. No. 515,112
Int. Cl.² G02B 27/38
U.S. Cl. 330—4.3 8 Claims



1. An optical pulse compression and shaping system; which comprises,

an interferometer for receiving radiation from a radiation pulse source,

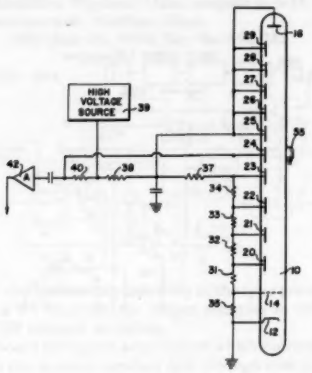
a laser amplifier in the optical path of radiation emerging from said interferometer, and

a pair of gratings in optical alignment with each other and the output radiation path of said laser amplifier.

3,943,458
REDUCING GAIN SHIFTS IN PHOTOMULTIPLIER TUBES

Charles E. Cohn, Clarendon Hills, Ill., assignor to The United States of America as represented by the United States Energy Research & Development Administration, Washington, D.C.

Filed Oct. 24, 1974, Ser. No. 517,678
Int. Cl.² H03F 1/00
U.S. Cl. 330—42 **5 Claims**



1. A device for reducing gain shift in a multiplier tube due to varying event count rates, the multiplier tube having dynodes arrayed in a cascaded series such that with appropriate biasing any dynode of the cascaded series is capable of being responsive to incident electrons directed thereto to emit secondary electrons at a rate amplified from the rate at which incident electrons are applied thereto, the secondary electrons emitted by one dynode being applied as incident electrons to the next consecutive dynode of the cascaded series, with the last dynode of the series being the output terminal, comprising: means coupled to the dynodes for limiting the number of consecutive active dynodes of the cascaded series to a predetermined number by rendering inactive at least one dynode of said cascaded series, with the last of the predetermined number of said consecutive active dynodes being the output terminal of the tube, and an amplifier coupled to said last consecutive active dynode and being responsive to the number of electrons incident on said last consecutive dynode to develop an output signal whose magnitude is proportional to and the amplification of the number of electrons incident on said last consecutive dynode.

3,943,459
TUNING SYSTEM FOR A MICROWAVE LOCAL OSCILLATOR

Paul S. Tosto, Woodbury, N.Y., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Apr. 2, 1975, Ser. No. 564,430
Int. Cl.² H03B 3/04
U.S. Cl. 331—4 **13 Claims**

12. A method for tuning a voltage controlled oscillator to a selected frequency, said oscillator having at each frequency in a frequency range of interest a rate of change df/dv of frequency with respect to the change in voltage that is constant despite changes in environmental conditions, comprising the steps of:

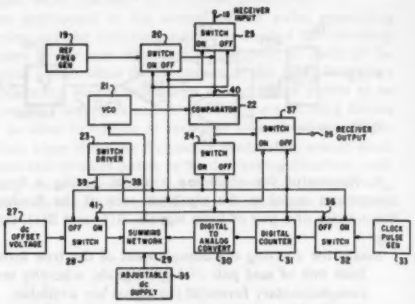
a. generating a primary reference frequency signal,

b. generating a varying control voltage to sweep the tuning of said oscillator through a frequency range which includes a secondary reference frequency that differs from said primary reference frequency by a specified difference frequency,

c. applying the varying voltage to the control port of the oscillator,

d. comparing the frequency of the reference signal with that of the oscillator to produce an output pulse when the two differ by said specified difference frequency and said oscillator is at said secondary reference frequency,

e. storing the instantaneous value of said varying voltage in response to said output pulse,



f. producing a dc offset voltage equal to the difference in the control voltage at said secondary reference frequency and at said selected frequency,

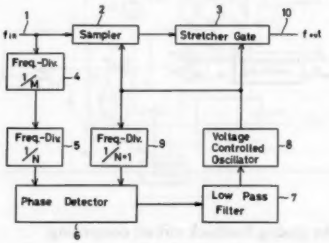
g. adding the stored and the offset voltages to produce a sum voltage, and

h. substituting said sum voltage for said varying voltage at the control port of the oscillator.

3,943,460
FREQUENCY CONVERSION SYSTEM

Minoru Arai, Tokyo, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Sept. 20, 1974, Ser. No. 507,986
Claims priority, application Japan, Sept. 21, 1973, 48-105944
Int. Cl.² H03B 3/04
U.S. Cl. 331—16 **3 Claims**



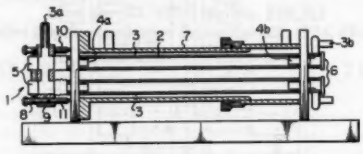
1. Frequency conversion apparatus for converting the frequency of an input signal, said apparatus comprising first frequency dividing means for dividing the frequency of the input signal by a factor MN, where M and N are respective frequency dividing factors, a voltage controlled oscillator, a second frequency dividing means for dividing the frequency of said oscillator by a factor N + 1, phase detector means controlling said oscillator so that the frequencies of the outputs of the first and second dividing means are equal, sampler means for sampling the input signal under the control of said oscillator, and a stretcher gate producing an output signal and being coupled and controlled by said oscillator and being coupled to and receiving an input from said sampler means, said second frequency dividing means comprising a frequency divider, an

OR gate coupled to said divider, means to feed clock pulses to said divider, a flip flop coupled to said OR gate, and an AND gate receiving said clock pulses and signals from said flip flop and applying an output signal to said OR gate, said flip flop transmitting reset signals to said divider.

3,943,461
HIGH POWER MULTIBEAM LASER

Akira Ichinose, and Norio Karube, both of Kadoma, Japan, assignors to Matsushita Electric Industrial Company, Limited, Japan

Continuation-in-part of Ser. No. 376,825, July 5, 1973. This application Sept. 13, 1974, Ser. No. 505,574
Claims priority, application Japan, July 5, 1972, 47-67729
Int. Cl.² H01S *3/086*
U.S. Cl. 331—94.5 C **5 Claims**

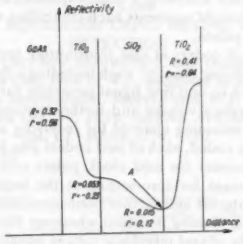


1. In a high power multibeam laser system including a plurality of oscillator tubes containing laser medium therein and positioned approximately parallel to one another, an output coupling mirror, and means for applying pump energy to said laser medium for establishing a population inversion therein, said multibeam laser system characterized in that said output coupling mirror is composed of segmented mirror elements with at least the inner surfaces thereof aligned in a single flat plane and in that the outer surface of said output coupling mirror has a convex configuration.

3,943,462
ANTIREFLECTION COATINGS FOR INJECTION LASERS

George H. B. Thompson, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 5, 1974, Ser. No. 439,806
Claims priority, application United Kingdom, Feb. 6, 1973, 5783/73
Int. Cl.² H01S *3/00*
U.S. Cl. 331—94.5 H **7 Claims**

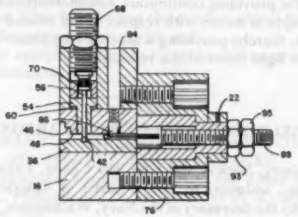


1. A semiconductor injection laser comprising a semiconductor body having an active region and optical reflective facets at opposite ends, one of said ends being a light emitting output end, means applying an energizing voltage to said laser, and an optical interference antireflective dielectric coating on said output end facet having a negative electric vector amplitude reflection coefficient and including an odd number of alternately high and low refractive index quarter-wavelength thickness layers.

3,943,463
TUNABLE OSCILLATOR/AMPLIFIER CIRCUIT FOR MILLIMETER-WAVE DIODES

Hiromu J. Kuno, Palos Verdes Peninsula, and David L. English, Garden Grove, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 331,416, Feb. 12, 1973, abandoned. This application Jan. 20, 1975, Ser. No. 542,527
Int. Cl.² H03B *5/18*
U.S. Cl. 331—107 R **12 Claims**

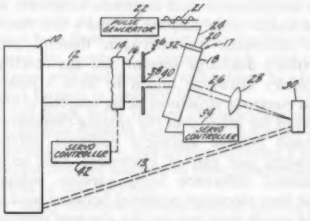


6. In a microwave or millimeter wave oscillator or amplifier having a negative resistance diode mounted on one wall of a waveguide structure and serially connectable via a bias pin to a DC supply, the improvement comprising: a hollow filter member positioned in an opening in a waveguide wall of said structure opposite said wall on which said diode is mounted and slidable on said bias pin toward and away from from said diode for varying the series loading on said diode, whereby the size and number of parts necessary to accomplish such loading is minimized.

3,943,464
MODULATOR FOR ELECTRICAL SIGNALS PROCESSED IN A LASER-ACOUSTIC DELAY LINE

Michael J. Brienza, Westport, and Frederik Weindling, Stamford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 244,498, April 29, 1972, abandoned. This application Aug. 30, 1973, Ser. No. 392,893
Int. Cl.² G02F *1/18*; H01J *3/14*
U.S. Cl. 332—7.51 **5 Claims**



1. Apparatus employing coherent light beams for processing an electrical signal provided by an electrical signal source, comprising:

means for heterodyning beams of light on a plurality of paths with each other to provide an electrical output signal having characteristics defined by differences between the heterodyned beams;

a source of coherent light providing a plurality of beams along respective paths to said heterodyning means;

optical means disposed in one of said paths to receive components of coherent light of the corresponding beam for phase shifting selected components thereof according to

an encoding pattern thereby providing a phase modulated light beam in the related path;

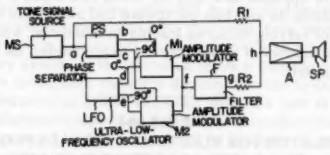
a laser-acoustic processing delay line having at one end a transducer connected to the electrical signal source for generating an acoustic traveling wave along an axis of said processing delay line, said processing delay line being disposed in one of said paths to receive the related beam at the Bragg angle to said axis at a location thereon, a diffracted light beam being provided in response to interaction between the related beam and said acoustic wave; and

means for providing continuous, non-incremental moving of said optical means with respect to the related one of said paths, thereby providing a time varying phase modulation of the light beam in the related path.

3,943,465
DUAL FIELD EXCITATION FOR A CARBON DIOXIDE LASER

Sol Aisenberg, Natick, and Kuo Wei Chang, Lexington, both of Mass., assignors to United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 21, 1974, Ser. No. 453,241
Int. Cl.² A015 3/22
U.S. Cl. 331—94.5 PE 6 Claims



1. An electron discharge device comprising:

a. a first pair of spaced electrode structures facing each other, each electrode structure comprising an anode, a cathode, and a gas source for supplying a gas suitable for ionization to said electrode structure, said cathode and anode being adapted to hold a first electrical potential difference therebetween thereby producing an auxiliary discharge region, said gas reacting with said auxiliary discharge region to form a plasma, each of said electrode structures being adapted to emit electrons toward the other over the spacing therebetween when a second relative electrical potential difference exists between said pair of electrodes, said second relative potential difference being variable independently of said first electrical potential between said cathode and said anode thus making the electron emissions through the spacing between said electrodes independent of said first electrical potential;

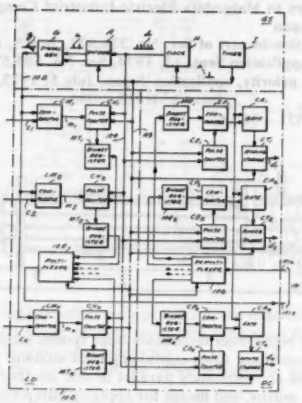
b. at least one additional pair of similarly constructed spaced electrode structures facing each other but arranged so that the electrons traversing the space therebetween cross a section of the space between the first pair of electrode structures; and

c. means adapted to receive and utilize a multi-phase alternating current to energize the cathode and anode of each electrode pair, the total number of phases being proportional to the total number of electrode pairs, whereby each pair of electrode structures is energized at different time intervals during a cycle of operation.

3,943,466
COMPANDER FOR TDM TELECOMMUNICATION SYSTEM

Evangelo Lyghounis, Milan, Italy, assignor to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed July 1, 1974, Ser. No. 484,961
Claims priority, application Italy, July 12, 1973, 26504/73
Int. Cl.² H03G 7/00; H04B 1/64; H03K 13/02; G08C 15/06
U.S. Cl. 333—14 8 Claims



1. A compander for a TDM telecommunication system wherein a transmitting terminal, having means for periodically sampling the signal amplitudes on a multiplicity of incoming signal channels, is connected via a communication link with a receiving terminal having means for distributing arriving amplitude samples to a multiplicity of outgoing channels, comprising:

synchronized timing means at said terminals for generating respective sequences of 2^n isochronous clock pulses during a coding interval occurring at least once per sampling period, with $n = m + p$, the number 2^n representing a multiplicity of quantizing amplitude levels subdivided into 2^m groups of 2^p amplitude levels per group;

a first signal generator at said transmitting terminal and a second signal generator at said receiving terminal controlled by said timing means for respectively producing, during each coding interval, a first and a second reference voltage each following a quasi-exponential curve divided into 2^m straight segments each coinciding with a series of 2^p clock pulses;

a plurality of coders at said transmitting terminal, one for each incoming channel, each including a first comparator connected to said first signal generator for receiving said first reference voltage and further connected to the respective incoming channel for receiving amplitude samples to be coded, each of said coders also including a first binary counter for said clock pulses connected to said timing means for zero-setting at the beginning of each coding interval and further connected to said first comparator for halting its count whenever the instantaneous magnitude of said reference voltage equals the amplitude sample to be coded;

multiplexing means at said transmitting terminal for delivering respective binary codes, representing the counts of the several first counters thereof, in interleaved relationship to said communication link during each sampling period;

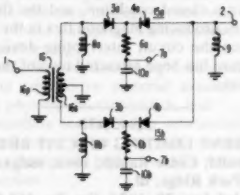
a plurality of decoders at said receiving terminal, one for each outgoing channel, each including a second binary counter for said clock pulses connected to said timing means for zero-setting at the beginning of a decoding interval of the same duration as said coding interval; and

demultiplexing means at said receiving terminal for distributing arriving binary codes from said communication link to said decoders during each sampling period, each decoder also including a second comparator connected to said demultiplexing means and further connected to said second counter, output means including a normally closed sampling gate inserted between the respective outgoing channel and said second signal generator, said sampling gate being controlled by said second comparator for opening at the instant when an arriving binary code matches the count of said second counter to pass the instanteneous amplitude of said second reference voltage.

3,943,467
AMPLITUDE LIMITER CIRCUIT

Takahiko Yamada, and Tadahiko Sakabe, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Apr. 22, 1975, Ser. No. 570,313
Claims priority, application Japan, Apr. 25, 1974, 49-47335
Int. Cl.² H03G 11/06, 11/02
U.S. Cl. 333—17 L **2 Claims**

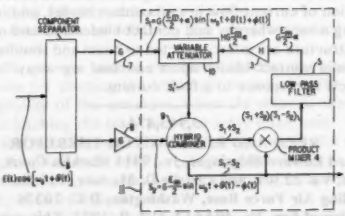


1. An amplitude limiter circuit comprising, a phase inverter circuit having first and second terminals for branching an input signal into two components, said components having substantially equal amplitude and opposite polarities, first and second diode circuits connected between said first and second terminals respectively, a third terminal coupled to said first and second diode circuits for deriving an output signal therefrom, each of said diode circuits including a pair of diodes connected in series and with opposite polarities to each other and a constant current circuit connected to said pair of diodes so as to pass bias currents through said diodes from a junction point between said diodes; whereby constant current values for biasing said first and second diode circuits, respectively, are selected at different values from each other.

3,943,468
AMPLITUDE EQUALIZER USING MIXING FOR ERROR DETECTION

Donald Clyde Cox, New Shrewsbury, and Douglas Otto John Reudink, Sea Girt, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Oct. 29, 1974, Ser. No. 518,588
Int. Cl.² H04B 3/14, 1/10
U.S. Cl. 333—18 **4 Claims**



1. A device for equalizing the amplitudes of two input signals comprising:

an attenuator with a control input for varying the amplitude of one of the two input signals;

means for applying one input signal to said attenuator to produce an attenuated signal;

means responsive to the other input signal aand said attenuated signal for generating a sum signal which is the sum of said attenuated signal and said other input signal, said means for generating also generating a difference signal which is the difference of said attenuated signal and said other input signal;

means for mixing said sum and said difference signals to form a product signal;

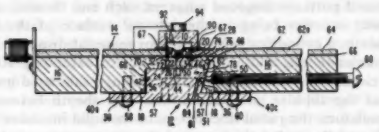
a low-pass filter for filtering the product signal to produce a low frequency error signal; and

means for applying the error signal to said control input of said attenuator.

3,943,469
MECHANICAL STRUCTURE FOR MOUNTING MICROWAVE DIODE PACKAGES

Hirohisa Kawamoto, Kendall Park, N.J., and Elmer Lawrence Allen, Jr., Philadelphia, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 25, 1974, Ser. No. 527,056
Int. Cl.² H01P 1/00
U.S. Cl. 333—84 M **5 Claims**



1. An apparatus for mounting a device in a stripline circuit of the type having a dielectric substrate with a ground plane conductor on one face of the substrate and a narrow strip-like conductor on the opposite face of the substrate, said circuit having an aperture for receiving said device in a position to allow for electrical connections to said strip-like conductor, comprising:

a. a first block of electrically and thermally conductive material mounted in contiguous relation with said ground plane to provide an electrical ground to said circuit and to conduct heat from said circuit, said first block having an opening for receiving a second block, said opening being aligned with said aperture and defined by a plurality of surfaces formed in said first block,

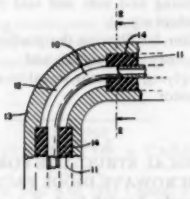
b. said second block being formed of electrically and thermally conductive material and including a surface portion for mounting said device, and further including a plurality of additional surfaces adapted to mate substantially with the surfaces of said opening,

said device being mounted on said surface portion of said second block and having one terminal of said device being electrically and thermally connected to said second block mounting surface portion,

c. means for forcing said second block into close mating relation with said first block whereby said mating surfaces of said second block are pressed into good thermal and electrical contact with the corresponding surfaces of said opening in said first block,

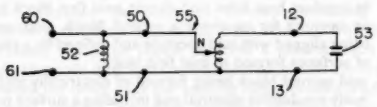
d. said forcing means including an adjustable force producing member adapted to apply a force to one surface of said second block to adjustably force said second block into said first block along two major axes of the respective blocks, the angle of said force relative to said one surface being an acute angle.

3,943,470
RIGHT ANGLE CONNECTOR
Chalice Bingham, Oak Ridge, Tenn., assignor to Sealectro Corporation, Marmaroneck, N.Y.
Continuation-in-part of Ser. No. 386,204, Aug. 6, 1973, abandoned. This application Sept. 20, 1974, Ser. No. 507,741
Int. Cl.[2] H01P *1/02, 3/06, 5/02*
U.S. Cl. 333—97 R 4 Claims



1. A coaxial connector, extending 90° along a circular arc, for high frequency applications comprising: an outer tubular sheath extending 90° along a circular arc and made of a conductive material having an inner surface defining a space for an air dielectric, said tubular sheath including annular recessed portions disposed adjacent each end thereof, said annular recesses being in the internal surface of the tubular sheath; a cylindrical solid insulator material disposed in each annular recess; and a central conductor extending 90° along a circular arc and concentrically through said solid insulators and the tubular air space within said sheath between said insulators; the radial thicknesses of the solid insulator materials and the radial thickness of the air space in combination with their dielectric constants providing a constant ohmic impedance in all portions of the line.

3,943,471
DIGITAL TUNING DEVICE
Paul A. Ryan, 5644 Lindenwood Road, Columbus, Ohio 43229
Filed Aug. 2, 1974, Ser. No. 494,245
Int. Cl.[2] H03J *5/02*
U.S. Cl. 334—59 9 Claims



1. A resonant circuit with a resonant frequency which is accurately selectable in digital increments corresponding to digital increments of a turns ratio of a transformer means included in said resonant circuit, said resonant circuit comprising,

inductive means,

capacitive means,

transformer means with input and output terminals said output terminals having a fixed number of windings therebetween said transformer means having accurately selectable turns ratio in digital increments,

said capacitive means connected to said output terminals of said transformer means and said inductive means connected to said input terminals,

whereby said circuit resonants at a frequency which is directly proportional to said turns ratio and variations in said turns ratio produce directly proportional variations in said resonant frequency.

3,943,472
CURRENT LIMITING CIRCUIT BREAKER
Clark L. Oster, and Joseph M. Khalid, both of Cedar Rapids, Iowa, assignors to Square D Company, Park Ridge, Ill.
Filed Apr. 29, 1974, Ser. No. 465,010
Int. Cl.[2] H01H
U.S. Cl. 335—16 4 Claims

1. An electromagnetically operable electric circuit interrupting device comprising a molded case, a magnetic core in the case, an armature in the case normally in spaced relationship to the magnetic core and attractable theretoward upon establishment of a predetermined amount of magnetic flux in the magnetic core, a pair of separable contacts in the case, means in the case operatively connecting one of the contacts to the armature and separating the contacts upon attraction of the armature toward the magnetic core, and a conductor system in the case associated with the magnetic core and including a first conductor turn for the magnetic core and a second conductor turn for the magnetic core, the second conductor turn being connected in parallel with the contacts, the first conductor turn being connected in series with the contacts and also in series with the second conductor turn, the first conductor turn producing magnetic flux in the magnetic core when the circuit interrupting device is energized and the contacts are in a closed condition, and the first and second conductor turns producing magnetic flux in the magnetic core additively when the circuit interrupting device is energized and the armature has been attracted toward the core to separate the contacts.

3,943,473
CURRENT LIMITING CIRCUIT BREAKER
Joseph M. Khalid, Cedar Rapids, Iowa, assignor to Square D Company, Park Ridge, Ill.
Filed Apr. 29, 1974, Ser. No. 465,012
Int. Cl.[2] H01H *77/10*
U.S. Cl. 335—16 26 Claims

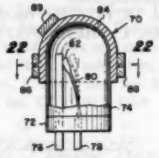
1. A current limiting circuit breaker comprising a molded case, a first pair of separable contacts inn the case, thermally and electromagnetically operable tripping means in the case effective upon operation to cause separation of the first pair of contacts, a pair of elongated contact blades pivotally mounted in the case, each of the contact blades having a contact mounted thereon and engaged with the contact on the other of the contact blades when the contact blades are in a closed position, the contacts on the contact blades being a second pair of separable contacts connected in series with the first pair, electromagnetically operable means in the case effective upon operation to cause separation of the contact blades and their contacts, a resistor in the case connected in parallel with the second pair of contacts, the resistor having a resistance transformable from a relatively low value to a relatively high value, an elongated magnetic core structure spanning opposite sides of said contact blades along a substantial current carrying portion thereof including the respective portions at which said contacts are mounted, said magnetic core structure being effective upon operation of the electromagnetically operable means to establish a magnetic field transverse to the direction of contact separation, transverse to the arc therebetween as said contacts separate, and transverse to the direction of current flow in said contact blades, and interconnecting means whereby said contact blades and said magnetic core structure are interconnected to coact and simultaneously urge said contact blades apart and said arc away from said contacts in response to a fault current.

3,943,474
REED AND REED SWITCH THEREFOR
Bernard Edward Shlesinger, Jr., 9411 Macklin Court, Alexandria, Va. 22309, and Charlie D. Mariner, 121 Garrison St., Bolling Air Force Base, Washington, D.C. 20336
Division of Ser. No. 404,612, Oct. 9, 1973. This application Dec. 16, 1974, Ser. No. 533,223
Int. Cl.[2] H01H *51/28*
U.S. Cl. 335—151 53 Claims

1. A reed switch comprising:

a. a first reed of conductive magnetic material

b. a second reed of conductive non-magnetic material mounted in cooperating spaced relation to said first reed
c. said first reed comprising a body of conductive material having a contact section, an intermediate spring section, and a support section
d. said intermediate section being foil-thin
e. said support section being substantially rigid and non-flexible
f. said contact section being substantially thicker than said intermediate section



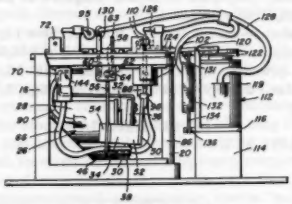
g. said intermediate section comprising a leaf spring having a flexibility permitting one end of said leaf spring to flex a substantial distance through an arc with respect to the other end of said leaf spring without exceeding the elastic limits of said spring
h. said intermediate section being cold-worked to a point where said conductive material assumes a substantial change in physical characteristics, and
i. said intermediate section being substantially harder, less ductile, and more dense than said contact section and having a substantiall higher tensile strength than said contact section.

3,943,475

LATCH RELAY WITH ELECTRICAL RESET

Chester H. Fluder, Wheeling, and Matthew R. Heeney, Niles, both of Ill., assignors to Vapor Corporation, Chicago, Ill.

Filed Dec. 6, 1974, Ser. No. 530,287
Int. Cl.² H01H 9/20
U.S. Cl. 335—161 **10 Claims**



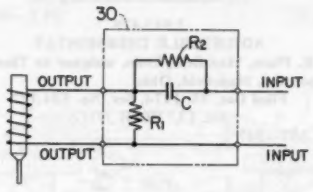
1. A latch relay assembly comprising:
a coil having an armature mounted in movable relation therewith;
switching means connected to the armature for switching the relay between at least two states;
abutment means, of relatively low mass, connected to the armature;
movable plunger means mounted adjacent the abutment means for abutting the abutment means near the center of gravity of the armature, when the relay is energized, thus latching the relay in a first relay state; and
electrical means connected to the plunger means for releasing the plunger means from abutting the abutment means thus returning the relay to a second relay state, when the relay is de-energized;
whereby the relatively low mass of the abutment means and the disposition of the plunger means near the center of gravity of the armature render the relay resistant to shock and vibration.

3,943,476

PLUNGER DAMPING MEANS FOR AN ELECTROMAGNETIC SOLENOID

Motoi Iyeta, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Dec. 10, 1974, Ser. No. 531,367
Claims priority, application Japan, Dec. 11, 1973, 48-139914; July 24, 1974, 49-87862[U]
Int. Cl.² H01F 7/18
U.S. Cl. 335—239 **10 Claims**



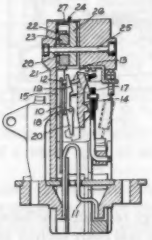
1. An electromagnetic solenoid comprising:
a yoke having a hollow cylinder,
an electromagnetic coil wound around said cylinder and connectable to a power source,
a plunger slidably inserted in said cylinder and rendered movable in said cylinder upon energization of said coil, said plunger and cylinder each having a confronting surface which is faced by a confronting surface of the other of said plunger and cylinder during sliding movement of the plunger,
the confronting surface of at least one of said plunger and cylinder having a plurality of separated grooves formed therein each extending in a direction perpendicular to the direction of sliding movement and separated along said direction of sliding movement, and
a highly viscous braking substance positioned in said grooves for reducing the speed of movement of said plunger in said cylinder.

3,943,477

ELECTRICAL CIRCUIT BREAKERS

Alan Lister Kidd, Southport; Douglas Eaves, Blackpool, and Keith Walmsley, Preston, all of England, assignors to Dorman Smith Switchgear Limited, Preston, England

Filed Sept. 12, 1974, Ser. No. 505,223
Claims priority, application United Kingdom, Oct. 4, 1973, 46291/73
Int. Cl.² H01H 71/16
U.S. Cl. 337—57 **6 Claims**



1. In an electric overload protection apparatus including a thermal element which on being heated by fault current is deflected towards a pivotable trip bar for tripping a circuit breaker, the improvement in a means for varying the action of

the thermal element and thereby varying the rating of the circuit breaker comprising:

a slide displaceable relative to the thermal element,

a camming element pivotable in response to movement of the slide,

a manually operable externally accessible knob having a recess,

a rotatable boss eccentrically and adjustably mounted in the recess of the knob, with rotation of the knob achieving corresponding linear displacement of the slide in a plane substantially parallel to the thermal element.

3,943,478

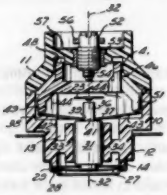
ADJUSTABLE THERMOSTAT

Donald E. Place, Mansfield, Ohio, assignor to Therm-O-Disc Incorporated, Mansfield, Ohio

Filed Dec. 18, 1974, Ser. No. 534,127

Int. Cl.² H01H *37/12*

U.S. Cl. 337—347 **15 Claims**



1. An adjustable thermostat comprising a body assembly, a bimetal snap disc on said body assembly providing a central portion movable with snap action between two positions of stability, a switch on said body assembly operated by said snap movement of said disc, an elongated leaf spring having a central section and opposite end sections, said central section operating to apply a spring force to said disc to adjust the operating temperature of said disc, and adjusting means adjustably positioning both ends of said spring for adjusting said spring force.

3,943,479

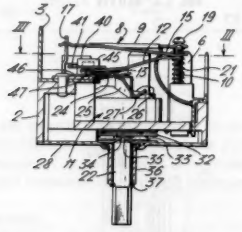
ENERGY REGULATOR

Norman Jack Turner, Tauranga, New Zealand, assignor to Australian Controls Industries Pty., Ltd., Niddrie, Australia

Filed July 24, 1974, Ser. No. 491,284

Int. Cl.² H01H *37/12, 37/14*

U.S. Cl. 337—347 **16 Claims**



1. An electrical energy regulator including; a body section; an actuator attached to said body section and having a heater associated therewith, part of said actuator being movable relative to the remainder thereof in response to energization of said heater; switch means secured to said body section in predetermined relation to said actuator; lever means acting between said actuator and said switch means and being movable about a fulcrum in response to said movement of the actuator and to thereby cause actuation of said switch means; and cam means movably mounted on said body section and being operable to adjust the position of said fulcrum relative to said actuator and to thereby alter the amount of movement of said actuator part necessary to cause actuation of said switch means.

3,943,480

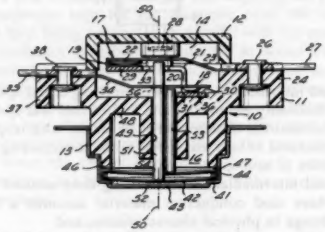
THERMOSTAT

Donald J. Schmitt, Mansfield, Ohio, assignor to Therm-O-Disc Incorporated, Mansfield, Ohio

Filed Dec. 18, 1974, Ser. No. 533,925

Int. Cl.² H01H *37/52*

U.S. Cl. 337—371 **28 Claims**



1. A multiple disc thermostat comprising a body assembly, first and second switches supported on said body assembly, a pair of bimetal snap discs concentrically supported on said body assembly, with one disc operating one switch and the other disc operating the other switch, one of said discs being automatically thermally resettable, the other of said discs being non-automatic and nonresettable in use.

3,943,481

GALVANO-MAGNETIC EFFECT DEVICE

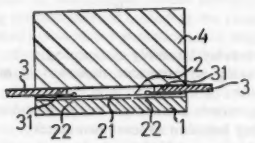
Noboru Masuda, Saitama; Yu Nishino, Yokohama, and Hisashi Takiguchi, Tokyo, all of Japan, assignors to Denki Onkyo Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 368,623, June 11, 1973. This application Feb. 11, 1974, Ser. No. 441,630

Claims priority, application Japan, June 10, 1972, 47-57859; Mar. 26, 1973, 48-36884[U]; Aug. 2, 1973, 48-91805[U]

Int. Cl.² H01C *7/16*

U.S. Cl. 338—32 R **8 Claims**



1. A galvano-magneto effect device comprising:

a. a substrate;

b. a galvano-magneto effect element mounted on said substrate comprising a thin semiconductor layer of a magnetism sensing material, said galvano-magneto effect element including a plurality of electrodes extending therefrom;

c. a plurality of leads coupled to said electrodes; and,

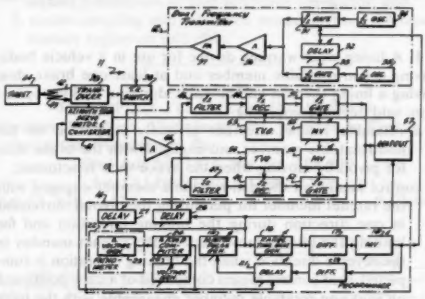
d. a cover plate means, having a high magnetic permeability, covering said semiconductor layer, wherein a portion of each of said plurality of leads is coupled to said galvano-magneto effect element on the surface of said ele-

ment facing said cover plate means such that said leads are sandwiched between said cover plate means and said galvano-magneto effect element and wherein said cover plate means includes an integral embossed portion extending therefrom into the space between said leads towards said semiconductor layer, the thickness of said embossed portion being less than or equal to the thickness of said leads.

3,943,482
MARINE MINE DETECTOR

Francis J. Murphree, Sunnyside; Henry L. Warner, and Edward G. McLeroy, Jr., both of Panama City, all of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 3, 1967, Ser. No. 673,254
Int. Cl.² G01S 9/68
U.S. Cl. 340—3 R **10 Claims**



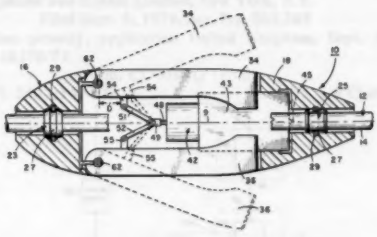
1. An echo-search system, comprising in combination:
means for broadcasting a predetermined plurality of target search signals, each of which has a frequency different from that of the others;
means for timely receiving said plurality of target search signals after they have been reflected from a target;
means connected to said receiving means for separating said received plurality of target search signals into the component signals thereof according to their individual broadcast frequencies;
means effectively coupled to the output of said received signal separating means for successively gating the individual frequency component signals thereof;
programmer means connected to said broadcasting means and to the aforesaid gating means for effecting the broadcast of said target search signals and the gating of the aforesaid received individual frequency component signals thereof, respectively, in accordance with a predetermined program, said programmer means including a variable master pulse generator, with the output thereof effectively connected to the inputs of said gating means; a range time base generator connected to the output of said variable master pulse generator; a first differentiator connected to the output of said range time base generator; a variable monostable multivibrator having an input and an output, with the input thereof connected to the output of said first differentiator, and with the output thereof effectively connected to an input of said broadcasting means for timely initiating the broadcast of said predetermined plurality of target search signals; a second differentiator coupled to the output of said variable monostable multivibrator; and a variable delay line having a pair of inputs and an output, with one of the inputs thereof adapted for regulating the delay period thereof in response to a predetermined signal, with the other input thereof connected to the output of said second differentiator, and with the output thereof connected to the trigger input of the aforesaid variable master pulse generator: and

means coupled to the outputs of said gating means for reading out the successively gated individual frequency component signals therefrom.

3,943,483
DEPTH CONTROLLERS FOR SEISMIC STREAMER CABLES WITH DIMENSION VARIABLE LIFT-PRODUCING MEANS

Booth B. Strange, Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.

Filed May 8, 1974, Ser. No. 468,127
Int. Cl.² G01V 1/00; B60P 3/00
U.S. Cl. 340—7 PC **12 Claims**



1. A depth controller for controlling the depth at which an object coupled to the controller is towed in water, said controller comprising:
a streamlined body;
depth control elements movably mounted in said body; and
depth control means operatively coupled to said elements to extend them and retract them from and into said body in dependence upon the depth of the controller in said water.

3,943,484
METHOD OF ATTENUATING UNWANTED SEISMIC REFLECTIONS IN UNDERWATER SEISMIC EXPLORATION

Vearle Spurlock Balderson, Dallas, Tex., assignor to Avance Oil & Gas Company, Inc., Midland, Tex.

Filed Nov. 26, 1973, Ser. No. 418,964
Int. Cl.² G01V 1/38
U.S. Cl. 340—7 R **3 Claims**

1. A method of conducting seismic exploration in water covered areas comprising:
positioning a seismic detector below the surface and above the bottom of a water layer at about the seismic wave time center,
producing a seismic disturbance below the surface of the water at about the seismic wave time center which generates seismic waves which will penetrate and be reflected from subsurface strata and also be reflected between the surface and bottom of the water layer to produce reverberations,
detecting the reflected seismic waves in said seismic detector, said seismic detector being of a character that reflections of a seismic wave from the surface and bottom of

the water layer will cancel and only be detected at reduced amplitudes, and

recording the detected seismic energy.

3,943,485

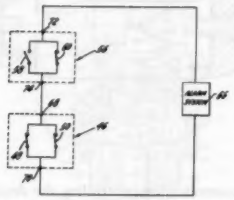
ALARM SYSTEM FOR THREE-ELEMENT WINDOWS

Martin Waldman, Titusville, N.J., assignor to Marjo Systems, Inc., Rahway, N.J.

Filed May 1, 1975, Ser. No. 573,740

Int. Cl.[2] G08B *13/08*

U.S. Cl. 340—274 R 9 Claims



1. An alarm system comprising:

first, second and third elements slidably positioned within an opening having upper and lower ends;

said first element being movable between a closed position in which a lower end of said first element is adjacent said lower end of said opening and an open position in which said lower end of said first element is away from said lower end of said opening;

said second element being movable between a closed position in which an upper end of said second element is adjacent said upper end of said opening and an open position in which said upper end of said second element is away from said upper end of said opening;

said third element being movable between a down-closed position in which a lower end of said third element is adjacent said lower end of said opening and an up-closed position in which an upper end of said third element is adjacent said upper end of said opening;

first switching means switchable between first and second conditions in response to said first element being moved between its closed and open position when said third element is away from its said down-closed position or in response to said first element being moved between its closed and open position and said third element being moved from its down-closed position towards its up-closed position;

second switching means switchable between first and second conditions in response to said second element being moved between its closed and open position when said third element is away from its said up-closed position or in response to said second element being moved between its closed and open position and said third element being moved from its up-closed position towards its down-closed position;

alarm means; and

circuit means connecting said first and second switching means to said alarm means for energization of same in response to said first or second switching means switching between its first and second conditions.

3,943,486

LINING WEAR WARNING DEVICE

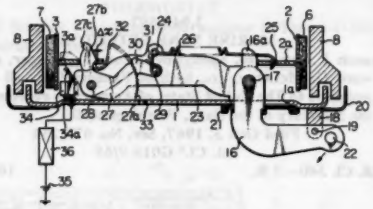
Yoshihiro Hayashida, Chigasaki, and Haruyuki Amano, Ebina, both of Japan, assignors to Tokico Ltd., Kawasaki, Japan

Filed Sept. 16, 1974, Ser. No. 506,051

Claims priority, application Japan, Jan. 17, 1974, 49-8035

Int. Cl.[2] B60T *17/22*

U.S. Cl. 340—52 A 2 Claims



1. A lining wear warning device for use in a vehicle brake having a non-rotatable member and at least one brake shoe having a lining thereon and movable during a braking operation, said device comprising:

a rotatable ratchet member pivotally supported on the non-rotatable member and engaged with the brake shoe for pivotally moving when the brake shoe is actuated;

control means on the non-rotatable member engaged with the ratchet member for permitting the pivotal movement in one direction during the braking operation and for limiting the pivotal movement of the ratchet member in the reverse direction when the braking operation is completed, said control means comprised of a claw positioned on said non-rotatable member engageable with the teeth of said ratchet member;

a warning circuit engageable with said ratchet member for detecting a predetermined amount of movement between the ratchet member and the non-rotatable member corresponding to the amount of lining wear and for warning when the lining wear reaches a predetermined level, said warning circuit comprised of:

an electric source;

a warning indicator connected to the electric source for warning when the lining wear reaches a predetermined level; and

an electric limiting switch connected to said warning indicator, engageable by said ratchet, and operative in response to a predetermined amount of movement between the ratchet member and the non-rotatable member, said relative movement being proportioned to an amount of lining wear, whereby when the lining wear reaches a predetermined amount, the limiting switch will close in response to the movement of the ratchet member and activate the warning indicator.

3,943,487

INTEGRATED CIRCUIT DIGITAL PATTERN DETECTOR

Arthur Richard Pottle, Cheshunt, England, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 27, 1974, Ser. No. 455,107

Claims priority, application United Kingdom, Mar. 30, 1973, 15388/73

Int. Cl.[2] G06F *7/04*

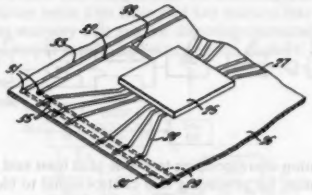
U.S. Cl. 340—146.2 24 Claims

1. A code detector, which comprises, in combination,

1. an electrically insulating substrate having a first plurality of input conductors and a second plurality of input conductors formed on one surface of said substrate,

2. a semiconductor chip bearing a logical detecting circuit mounted on the said one surface of said substrate, said chip having input contact regions coupled respectively to said first and second input conductors,

3. a reference conductor formed on the other surface of said substrate, said reference conductor crossing each of said second plurality of input conductors and spaced therefrom by said substrate,



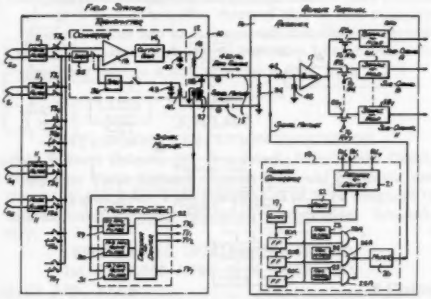
4. means to selectively couple predetermined ones of said second conductors to said reference conductor, and
5. means coupling said reference conductor to a reference contact region on said chip.

3,943,488

MULTIPLEX TELEMETERING SYSTEM

Masahiro Kazahaya, Warminster, Pa., assignor to Fischer & Porter Co., Warminster, Pa.

Filed July 16, 1974, Ser. No. 488,950
Int. Cl.² H04Q *9/12*; G08C *15/06*
U.S. Cl. 340—147 C **9 Claims**



1. A multiplex telemetering system for transmitting a group of electrical data signals, each representing a distinct analog value, over a common channel to a remote receiving terminal, said system comprising:

A. a transmitter including a commutator formed by a series of individually actuatable switches for sequentially supplying said analog data signals to said common channel;

B. a receiving terminal including a commutator sequentially distributing the analog data signals received from said common channel to separate sub-channels, the commutator having a like series of switches, and

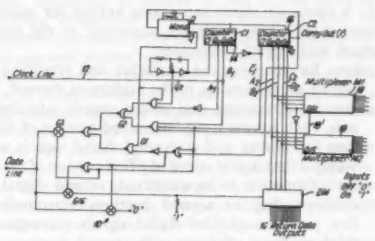
C. apparatus synchronizing the operation of the transmitter and receiver commutators and including an address generator disposed at the receiving terminal to cyclically produce a series of multi-bit code values, the number of values in the series thereof being equal the number of switches in each commutator, means to decode said series of code values to produce a series of control voltages sequentially actuating said receiver commutator switches, means to translate each value in said series of code values into a distinctive audio signal mixture composed of different frequencies representing the bits of said code, each frequency in the signal mixture representing a respective bit in the multi-bit code, means at the receiving terminal to superimpose said signal mixture on the analog data signals in said common channel, means at the transmitter to intercept said signal mixture and to segregate the frequencies thereof from each other, means responsive to said segregated frequencies to restore them to the series of code values, and means to decode the restored code values to produce control voltages synchronously actuating the transmitter commutator switches.

3,943,489

ELECTRICAL CONTROL SYSTEMS

Arthur Edward Brewster, Thaxted; Donald Adams Weir, Goff's Oak, near Cheshunt; Christopher Alan Watson, Takeley; Roger Geoffrey George, Arkley, and Michael James Phillips, Stansted, all of England, assignors to Standard Telephone and Cables Limited, New York, N.Y.

Filed Sept. 5, 1974, Ser. No. 503,265
Claims priority, application United Kingdom, Sept. 21, 1973, 48378/73
Int. Cl.² H04Q *11/00*
U.S. Cl. 340—147 SY **5 Claims**



1. An electrical control system for controlling a number of devices from a central point, including:

transmitting means at said central point coupled over a single signal line to a plurality of controlled points, wherein each of said devices is allocated a time position in a repetitive predetermined cycle of time positions at which a control signal provided by said transmitting means respectively controls each device;

a plurality of receivers respectively disposed at said devices wherein each receiver is responsive only to signals at its time position in the repetitive cycle so that when one of said receivers detects control signals at its time position those signals are coupled to the device to be controlled, and wherein a continuous stream of control signals is provided by said transmitting means during the corresponding time position of the device to maintain a controlled device in a given one of two states;

wherein return data signals from the controlled devices are coupled to said central point over said single signal line and wherein each time position includes first and second portions, said first portion manifesting said control signals and said second portion manifesting said return data signals; and,

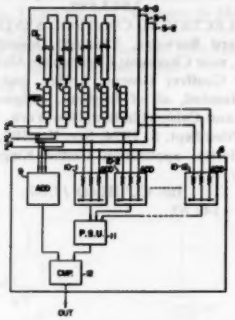
including a common clock pulse generator the output of which controls said transmitting means and all of said receivers, the output thereof being distributed by way of a common clock line extending to said transmitting means and to all of said receivers.

3,943,490

CHARACTER SIGNAL PROCESSING SYSTEM

Masaharu Tamai, Tokyo, and Shigeo Tanaka, Kawasaki, both of Japan, assignors to Fujitsu Limited, Japan

Filed Nov. 8, 1974, Serial No. 522,285
Int. Cl.² G06K 9/12
U.S. Cl. 340—146.3 AG 12 Claims



1. A character signal processing system for quantizing a character into binary signals according to the brightness thereof, said system comprising:

means for scanning the character and providing analog signals corresponding to the brightness thereof;

means for converting said analog signals into digital signals, each having a predetermined number of digits;

means for storing said converted digital signals and providing a first digital signal of a first portion of the character information to be quantized, second digital signals corresponding to second portions surrounding said first portion and third digital signals corresponding to third portions adjoining said second portions;

first means for receiving said first and second digital signals and providing as an output the sum thereof;

a plurality of second means, each for receiving selected second digital signals and the adjoining, third digital signals and providing as an output the sum thereof;

third means for receiving the sums from said plurality of said second means, selecting and providing an output of the largest one of those sums, and

means for comparing the output sum from said first means with the largest sum from said third means and providing as an output one binary signal when said output from said first means is larger than said output from said third means and another binary signal when said output from said first means is smaller than said output from said third means, thereby quantizing the character into said binary signals.

3,943,491

ULTRASONIC DIGITAL RECEIVER

John Castleberry, Jr., Cherry Hill; Edward Peter Cecelski, and Ralph Helmut Storz, both of Freehold, all of N.J., assignors to RCA Corporation, New York, N.Y.

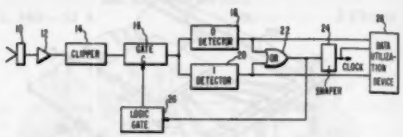
Filed Oct. 25, 1974, Ser. No. 518,097
Int. Cl.² H04Q 9/00
U.S. Cl. 340—171 R 5 Claims

1. Apparatus for receiving and decoding an applied signal wave having a plurality of spaced apart tones, each of one or another frequency, the spacing between successive tones being of predetermined duration, the length of each tone being of predetermined minimum duration, comprising in combination:

input transducer means producing an electrical signal corresponding to said signal wave;

normally conductive gate means coupled to said transducer means for normally passing said electrical signal representing each of said tones, said gate means having a control terminal responsive to a control signal for blocking passage of said electrical signal; and

means responsive to the signal from said gate means of a



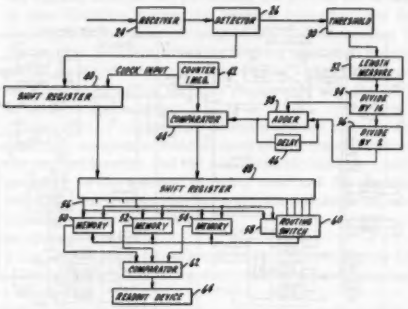
duration corresponding to a tone of at least said minimum duration for producing said control signal to block signal passage through said gate for a duration equal to the spacing between successive tones, and for also producing a digital pulse representing each tone of said one or another frequency.

3,943,492

PLURAL STORAGE SYSTEM

Richard C. Gall, Middleton, Wis., assignor to Oak Industries Inc., Crystal Lake, Ill.

Continuation-in-part of Ser. No. 281,334, Aug. 17, 1972, abandoned. This application Aug. 3, 1973, Ser. No. 385,307
Int. Cl.² G06F 3/00
U.S. Cl. 340—172.5 2 Claims



1. A method for storing a multibit message having a predetermined number of bits in which the total time of the message may vary within prescribed limits includng the steps of:

1. storing the presence or absence of message bits in a storage medium at intervals determined by a fixed clock frequency,
2. measuring the total time of the received message,
3. dividing the total time of the message by the predetermined number of bits to provide periodic clock signals,
4. transferring the message from the first storage medium to a second storage medium at a frequency determined by coincidence between said fixed clock frequency signals and periodic clock signals.

3,943,493

SHARED PROCESSOR DATA ENTRY SYSTEM

Richard M. Shelton, Oreland, Pa., assignor to Sperry Rand Corporation, Blue Bell, Pa.

Filed Mar. 13, 1974, Ser. No. 450,646
Int. Cl.² G06F 15/02
U.S. Cl. 340—172.5 14 Claims

1. A shared processor data entry system of the type having a plurality of key stations adapted to supply data to a central processing unit comprising:

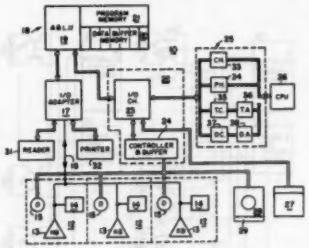
a plurality of key stations for producing data characters indicative of data records, each said key station having an associated keyboard, visual display and a magnetic stor-

age device having a removable medium for storing data records,

a central shared processor connectable to said key stations,

said processor having a programmable memory unit, an arithmetic and logic unit and a data buffer memory unit,

said processor providing means for directing character by character input data from said key stations into said data buffer memory unit and for directing character by character output to said associated visual displays,



means for supplying data to a host processing unit, and

input-output control means connected between said shared processor, said magnetic storage devices and said means for supplying data to a host processing unit,

said processor being programmed to transfer data records stored in said data buffer memory unit to said magnetic storage devices and to subsequently transfer said records stored in said magnetic storage devices to said means for supplying data to a host processing unit.

3,943,494

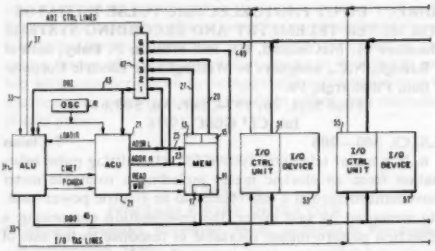
DISTRIBUTED EXECUTION PROCESSOR

Arthur Wilbert Holmes, Jr., Woodstock; Price Ward Oman, Wappinger Falls; Richard Charles Paddock, Kingston, and Donald Walter Price, Lake Katrine, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 26, 1974, Ser. No. 483,270

Int. Cl.² G06F *15/16, 9/19;* G05B *13/02*

U.S. Cl. 340—172.5 **8 Claims**



1. A data processing system comprising:

a memory for storing instruction information and data information, said memory having an information output, an information input, and an address input;

a first subprocessor having a first information input and an address output, said first information input being connected to said information output of said memory, said address output being connected to said address input of said memory;

said first subprocessor having an OP register for storing the operation code portion of an instruction, an input to said OP register being connected to said first information input;

said first subprocessor further having first instruction decoding means connected to outputs from said OP register for decoding an instruction received from said memory means, said first decoding means having a function modifier input for receiving a signal for modifying the function specified by said instruction;

a second subprocessor time synchronized to said first subprocessor, said second subprocessor having a second information input and an information output, said second information input being connected to said information output of said memory, said information output of said second subprocessor being connected to said information input of said memory;

said second subprocessor having a second OP register for storing the operation code portion of an instruction, an input to said second OP register being connected to said second information input;

second instruction decoding means connected to said second OP register for decoding said instruction;

an operand register having a load input connected to outputs of said second instruction decoding means for loading said operand register from said second information input when an operand is to be stored therein;

arithmetic and logic decision circuits having a plurality of inputs connected to outputs of said second instruction decoding means for performing arithmetic and logic decisions upon data received from an input connected to said operand register and information received from an input connected to said second information input of said second subprocessor, an output of said arithmetic and logic decision circuitry being connected to said information output of said second subprocessor;

and function modifying logic having inputs connected to said arithmetic and logic decision circuits, responsive to data information from said memory, an output from said function modifying logic being connected to said function modifier input of said first decoding means;

whereby each of said subprocessors is functionally responsive in a different predetermined manner to said instruction to perform a data processing operation as specified by said instruction upon information from said memory.

3,943,495

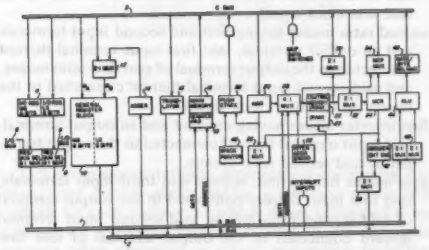
MICROPROCESSOR WITH IMMEDIATE AND INDIRECT ADDRESSING

Richard A. Garlic, Irvine, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 26, 1973, Ser. No. 428,632

Int. Cl.² G06F *9/00*

U.S. Cl. 340—172.5 **12 Claims**



1. In a microprocessor having first, second and third buses, a control memory having a plurality of control words stored therein at addressable locations at least some of said control words having a field containing an index value of which an instruction address is to be incremented, at least one register

connected to said first and second buses with a second index value therein, at least a second field within said control word:

means for placing an address of a control word on said first bus,

means responsive to the contents of said second field of a control word for selecting said index value or said second index value,

Means for placing said selected index value on said second bus,

means for combining said address and said index value to produce a relative address, and

means for addressing said control memory at a location specified by said relative address.

3,943,496

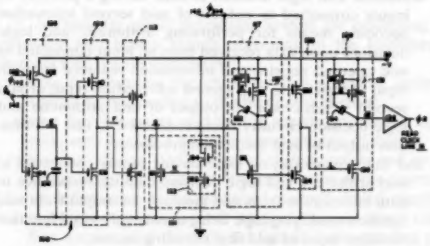
MEMORY CLOCKING SYSTEM

Clarence W. Padgett, Costa Mesa, and Francis L. Newman, El Toro, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Sept. 9, 1974, Ser. No. 504,399

Int. Cl.² G11C *11/40*

U.S. Cl. 340—173 DR **14 Claims**



1. Refresh clock signal generating means for generating a refresh clock signal from first and second clock signals, said refresh clock signal including a plurality of pulses per clock cycle, said generating means comprising:

clocked time delay means having an input terminal and an output terminal, said input terminal connected to a source of said first clock signal for initiating a delay period when said first clock signal obtains a predetermined state;

first ratio means having first and second input terminals and an output terminal, said first input terminal connected to the output terminal of said clocked time delay means, said second input terminal connected to the source of said first clock signal;

second ratio means having first and second input terminals and an output terminal, said first input terminal thereof connected to the output terminal of said first ratio means, and said second input terminal thereof connected to the source of said first clock signal;

first inverter means having an input and an output terminal, said input terminal thereof connected to the output terminal of said second ratio means;

gate means having first, second and third input terminals, said first input thereof connected to the output terminal of said second ratio means, said second input terminal thereof connected to the output terminal of said first inverter means and said third input terminal thereof connected to a source of said second clock signal; and

second inverter means having an input and an output terminal, said input terminal thereof connected to the output terminal of said gate means, and the signal at the output terminal thereof comprising the output signal of the refresh clock signal generator.

3,943,497

SPLIT COIL TYPE BUBBLE DOMAIN DRIVING APPARATUS

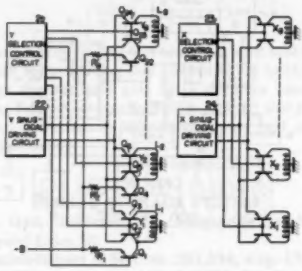
Shigeru Yoshizawa, Kodaira; Nobuo Saito, Mitaka; Itsuo Mikami, Kodaira, and Gen-ichi Kamoshita, Koganei, all of Japan, assignors to Hitachi, Ltd., Japan

Filed June 27, 1972, Ser. No. 268,185

Claims priority, application Japan, June 30, 1971, 46-48328

Int. Cl.² G11C *11/14, 8/00*

U.S. Cl. 340—174 TF **5 Claims**



1. A split coil type bubble domain driving apparatus comprising: a plurality of memory elements each consisting of at least one magnetic film for a bubble domain; a plurality of rotating in-plane field generating coil means provided one for each of said plurality of memory elements to apply bubble domain driving rotating fields in the plane of said memory element, each of said plurality of coil means consisting of an X coil and a Y coil for applying magnetic fields perpendicular to each other in the same plane of said memory plane; first driving means for supplying an alternating current to said rotating in-plane field generating coil means; and first selection means connected between said first driving means and said rotating in-plane field generating coil means for selecting a given one of said plurality of rotating in-plane field generating coil means in response to a memory request, whereby said alternating current from said first driving means is applied only to the rotating in-plane field generating coil means selected by said first selection means.

3,943,498

DIRECT INPUT PHOTOELECTRIC PULSE INITIATOR FOR METER TELEMETRY AND RECORDING SYSTEMS

Theodore M. McClelland, III, and William P. Doby, both of Raleigh, N.C., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

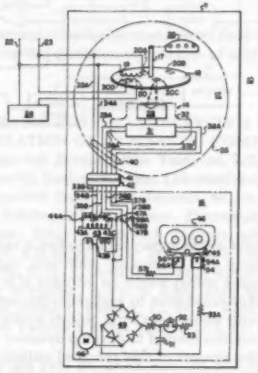
Filed Sept. 26, 1974, Ser. No. 509,611

Int. Cl.² G08C *19/16*

U.S. Cl. 340—206 **7 Claims**

6. In a meter telemetry system for transmitting pulse information from an electric meter including a rotatable meter movement rotated at a rate related to an electric power quantity measured by said meter, the combination comprising: a reflection pattern means rotatable in response to the rate of rotation of the meter movement; a photoelectric pulse initiator circuit including first and second radiation source-pickup pairs, each of said first and second pairs including a solid state radiation emitter source and a solid state radiation responsive pickup, said pickups being alternately activated at a rate responsive to the rate at which radiations are coupled between said emitter source and said pickup by rotation of the reflective pattern means, said pulse initiator further including a power input circuit including a rectifier for developing a source of a direct current from an alternating current applied to said power input, a low power solid state digital integrated circuit means supplied by said source of direct current, said integrated circuit means including a flip-flop circuit including

SET and RESET inputs alternately responsive to said alternate activation of said pickups of said first and second source-pickup pairs, and further including Q and Q logic outputs having alternately high and low logic states in response to the alternate inputs to said SET and RESET inputs, and output means including a pair of terminals connected to said Q and Q outputs for developing continuous opposite polarity current data pulses each having a predetermined polarity responsive to said high and low logic states of said Q and Q outputs, and a recorder telemetry receiver means including a two-wire



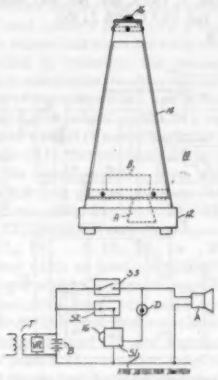
recorder circuit including an electrical recording means, said receiver means including an alternating current power supply circuit energized by said electric power measured by said electric meter, said alternating current power supply having an output connected to said power input circuit of said pulse initiator for applying the alternating current thereto; and conductor means connecting said pair of terminals of said output means of said pulse initiator circuit to an input to said two wire recorder circuit to energize said recording means by said opposite polarity current pulses to effect data recording of said pulses.

3,943,499
PORTABLE FIRE DETECTOR

Matthew J. Dunphy, Braintree, Mass., assignor to Pyrotector, Incorporated, Mass.

Filed Apr. 16, 1974, Ser. No. 461,297
Int. Cl.² G08B *21/00*
U.S. Cl. 340—227 R **3 Claims**

1. A portable fire detector, comprising a base and an upwardly projecting member, fire detecting means in said upwardly projecting member, and signalling means associated therewith, means responsive to the detection of fire by said fire detection means to energize said signalling means through a first circuit that includes circuit latching means, means responsive to the tilting of said device a predetermined angle away from and back to the vertical to energize and de-energize respectively said signalling device through a second circuit path, and means responsive to the tilting of said device away from the vertical a predetermined amount when the

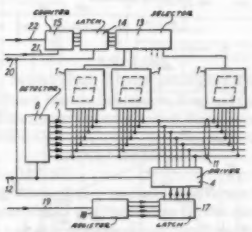


signalling device has been energized by the detector to de-energize the signalling device by breaking the first circuit.

3,943,500
SEVEN-SEGMENT DISPLAY ARRANGEMENT AND LIQUID FUEL DISPENSING PUMP EMBODYING THE SAME

Donald George Buchanan, Bottisham, England, assignor to Dresser Europe S.A., Brussels, Belgium

Filed May 2, 1974, Ser. No. 466,517
Int. Cl.² G09F *9/32*
U.S. Cl. 340—253 R **10 Claims**



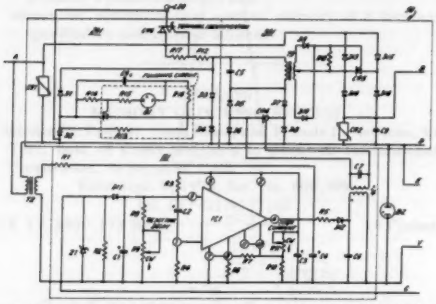
1. A seven-segment display arrangement comprising a seven-segment display device having a common anode and a cathode for each segment, a cathode driver connected to each cathode for supplying cathode current to the appropriate segment when energised, a circuit connection including a series diode connected to each cathode, a detector circuit connected to the circuit connections so as to draw current through the respective diode from the respective cathode driver in the event of a segment failure of the device, and an output from the detector circuit connected to give a warning indication on receipt of current through a diode.

3,943,501

PRINTING MACHINE HIGH VOLTAGE POWER SYSTEM AND CIRCUIT

Robert A. Kulka, Livingston; Thomas F. Bright, Bergenfield; Thomas P. Bruno, Philipsburg, and Charles S. Huffsmith, Metuchen, all of N.J., assignors to Wood Industries, Inc., Middlesex, N.J.

Filed Feb. 7, 1975, Ser. No. 547,868
Int. Cl.² G08B 21/00
U.S. Cl. 340—253 R 10 Claims



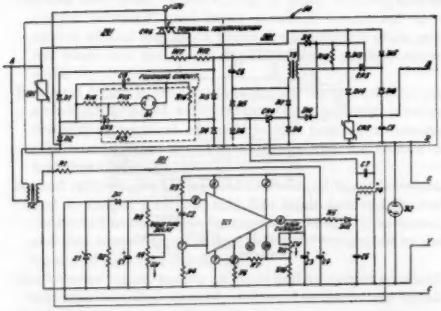
1. In an ink mist preventing system and circuit for a printing press having a source of electrical power comprising:
an interlock safety switch means;
an output transformer means;
an electrically activated signal means;
a flashing circuit;
an electronic switching means for activating said signal means; and
said electronic switching means including an integrated circuit member.

3,943,502

PRINTING MACHINE HIGH VOLTAGE POWER SYSTEM

Charles S. Huffsmith, Metuchen, N.J., assignor to Wood Industries, Inc., Middlesex, N.J.

Filed Feb. 7, 1975, Ser. No. 547,870
Int. Cl.² G08B 21/00
U.S. Cl. 340—253 R 9 Claims



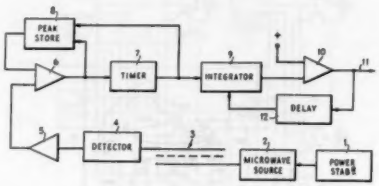
1. In an ink mist preventing system for a printing press having a source of electrical power comprising:
an interlock safety switch means;
an output transformer means;
a signal means;
a non-mechanical electronic switching means for activating said signal means; feedback means for interconnecting said output transformer means to said non-mechanical electronic switching means; and,
connecting means electrically interconnecting said signal light means to said switching means.

3,943,503

ELECTRONIC INTRUDER ALARM APPARATUS

Jeremy Hugh Whitman, Leatherhead, England, assignor to Unwin Electronics Ltd., West Molesey, England

Filed Nov. 11, 1974, Ser. No. 522,579
Claims priority, application United Kingdom, Nov. 13, 1973, 5674/73
Int. Cl.² G08B 13/18
U.S. Cl. 340—258 B 10 Claims



1. An intruder alarm apparatus including a radio-frequency radiation source for irradiating with said radio-frequency radiation a space within which an intruder is to be detected, a radio detector responsive to said radio-frequency radiation returned towards said source from objects within said space or from the boundaries thereof to develop detector signals representative of the amount of said returned radiation, and signal processing circuit means responsive to said detector signals to develop an alarm signal in response to predetermined fluctuations in said amount of said returned radiation, the improvement comprising:
signal peak comparator means in said signal processing circuit means; said signal peak comparator means yielding a resetting signal when the amplitude of a peak in said detector signal is not substantially less than the amplitude of a preceding signal peak;
timer means reset to an initial condition by each said resetting signal and, unless so reset, yielding an alarm control signal at an output thereof at the end of a predetermined time interval, the duration of said time interval being somewhat greater than the periodicity of an alternating current supply used to energize fluorescent tubes lighting said space;
and alarm means predeterminedly responsive to said alarm control signal to yield an intruder alarm signal;
whereby said alarm apparatus is immune to periodically fluctuating return of said radiation from said fluorescent tubes.

3,943,504

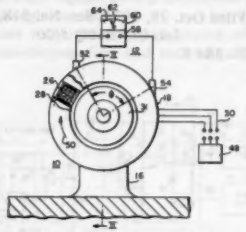
ELECTRIC MOTOR DIRECTION INDICATING DEVICE

Jan Vosicky, Media, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 25, 2975, Ser. No. 552,832
Int. Cl.² G01B 7/00
U.S. Cl. 340—271 9 Claims

1. A direction indicating device for indicating the direction of rotation of an A.C. electric motor having windings thereon, said device comprising;
a source of electrical energy producing an electromagnetic field within said windings,
means for sensing said electromagnetic field in said windings, and

display means for indicating the direction of movement of said electromagnetic field in said windings, the direction



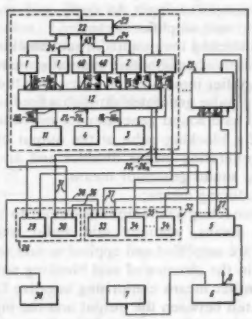
of movement of said electromagnetic field in said winding indicating the direction of rotation of said motor.

3,943,505

AUTOMATIC INFORMATION SYSTEM FOR THE ORGANIZATION OF GYMNASTIC COMPETITIONS

Albert Yazepovich Berzin, ulitsa Vaidavas, 2/5, kv. 39; Solomon Leibovich Buslovich, ulitsa Lokomotivnaya, 84, kv. 39; Gunar Yanovich Bush, ulitsa Tsaunes, 8a, kv. 9, all of Riga; Gennady Khaimovich Gershanov, Frunzensky val, 38, kv. 79, Moscow; Aivar Alfredovich Zhagars, ulitsa Lokomotivas, 88, kv. 87, Riga; Viktor Ivanovich Kalognomos, ulitsa Stankevicha, 9, kv. 3, Moscow; Georgy Kondratievich Sokolov, ulitsa Merkolya, 9, kv. 4, Riga; Jury Konstantinovich Chervinsky, ulitsa L. Paegles, 12, kv. 8, Riga, and Zigmund Yazepovich Yakovich, ulitsa Lenina, 142, kv. 17, Riga, all of U.S.S.R.

Filed Feb. 24, 1975, Ser. No. 552,068
Int. Cl.² G08B 5/36
U.S. Cl. 340—323 R **8 Claims**



1. An automatic information system for the organization of gymnastic competitions, intended to collect and process the individual scores awarded by the judges to each competitor, to facilitate and accelerate the judging procedure, to keep the record and score, as well as to provide for visual display of the current and final results of a competition and to send this information to a computer (6) controlling a luminous score board (7), comprising, for each event of an all-around gymnastic competition, judges' panels (1) and a superior judge's panel (2) intended for manual input of scores for individual exercises of a competitor, a luminous display unit (3) for displaying the number of the competitor and the points he or she has socred, and, for two events, namely, beam and floor exercises, a stop watch (4) for determining the duration of an exercise as performed by a competitor and the amount of points to be deducted, whereby the competitor and judges are informed as to the time competitor has spent so far and deductions are automatically made for exceeding the prescribed time limit; an interface (5) intended for feeding the information provided by the judges into said computer (6) and connected to said computer (6) controlling said luminous score board (7) and having its output connected to a printer; a scorer's panel (9) intended for the input and storage of the competitor's number and his or her final score and connected to said luminous display unit (3); a group of outputs (10_1, . . . , 10_n) of said scorer's panel (9); a digital printer (11) for printing the record and score for each competitor; a processor (12) intended to calculate the average and final scores awarded to a competitor, to store the current information on the progress of the competition, and to send it to said interface (5) to control said judges' panels (1), superior judge's panel (2) and scorer's panel (9), said luminous display unit (3), said digital printer (11), the processor being connected to all said units, and, for events, namely, beam and floor exercises, to said stop watch (4); groups of inputs (14_1, . . . , 14_n; 16_1, . . . , 16_n; 18_1, . . . , 18_n; 21_1, . . . , 21_n; 42_1, . . . , 42_n) of said processor (12); groups of outputs (13_1, . . . , 13_n; 15_1, . . . , 15_n; 17_1, . . . , 17_n; 19_1, . . . , 19_n; 20_1, . . . , 20_n, 41_1, . . . , 41_n) of said processor (12); an intercommunication unit (22) which is switched off while a competitor is executing an exercise; intercommunication lines (24); said intercommunication unit (22) being linked, through said intercommunication lines (24) with said judges's panel (1) and superior judge's panel (2); said judges' panels (1), superior judge's panel (2), scorer's panel (9), processor (12), luminous display unit (3), printer (11) and intercommunication unit (22), in each event of an all-around gymnastic competition, as well as said stop watch (4), in two events, namely, beam and floor exercises, making up a specialized digital device (25) intended to collect subjective initial information on an individual competitor from the judges of a particular event of the all-around competition, to process this information, to display the score of each competitor on the luminous score board (7), and to keep the record and score for each competitor, each of said digital devices being connected to said interface (5); a master judge's panel (28) providing for intercommunication with the judges of all events of the all-around gymnastic competition for displaying digital information from each said specialized digital device (25); and a dispatcher's panel (32) through which the dispatcher calls individual competitors in all events of the all-around gymnastic competitor, said dispatcher's panel being connected to all said specialized digital devices (25) and ensuring intercommunication with said master judge's panel (28), scorer panels (9) and technical service posts (39) in the gymnasium.

3,943,506

MULTIPLE RAMP DIGITISERS

Richard Challinor Peattie, Tarnham, England, assignor to The Solartron Electronic Group Limited, Farnborough, England

Filed Dec. 21, 1973, Ser. No. 427,186
Int. Cl.² H03K 13/20
U.S. Cl. 340—347 NT **7 Claims**

1. An integrating analog-to-digital converter for producing a digital output signal representative of the magnitude of an analog input voltage, the converter comprising:

an input terminal for receiving the analog input voltage;

integrating means comprising a differential amplifier having an inverting input, a non-inverting input and an output, and an integrating capacitance negative-feedback connected between the output and the inverting input;

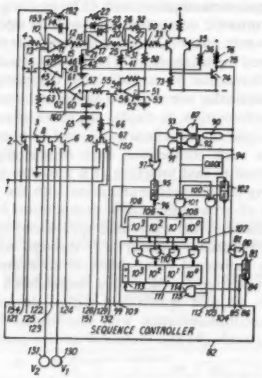
polarity testing means connected to said integrating means for receiving a signal representative of the voltage across said capacitance and responsive thereto to produce an output signal having a first level representative of one polarity of the voltage across said capacitance and a second level representative of the other polarity of the voltage across the capacitance;

first switch means for coupling the input terminal to one of said inputs of said differential amplifier during a first time

interval to charge said capacitance to a voltage whose polarity is dependent upon the polarity of the analog input voltage,

said first switch means being responsive to the output signal produced by said polarity testing means at the end of the first time interval to discharge said capacitance and to couple said input terminal to a predetermined one of said inputs of said differential amplifier during a second time interval when the analog input voltage is of one polarity, to charge said capacitance to a voltage of predetermined polarity whose magnitude is dependent on the magnitude of the analog input voltage,

and to couple said input terminal to the other input of said differential amplifier and temporarily to said predetermined one of said inputs when the analog input voltage is of the other polarity to slew the respective voltages at both inputs and at the output of the differential amplifier by an amount equal to the analog input



voltage, while preserving the voltage across said capacitance substantially unchanged, and to subsequently charge said capacitance during said second time interval to a voltage of said predetermined polarity whose magnitude is dependent upon the magnitude of the analog input voltage;

a source of at least one reference voltage of predetermined polarity;

second switch means for coupling said source of reference voltage to a preselected input of said differential amplifier, regardless of the polarity of the analog input signal, during a third time interval to discharge said capacitance, the end of the third time interval being indicated by a change in the output signal produced by said polarity testing means from one level to the other;

a source of clock pulses; and

pulse counter means for counting the clock pulses from said source during the third time interval to produce a digital output signal representative of the magnitude of the analog input signal.

3,943,507

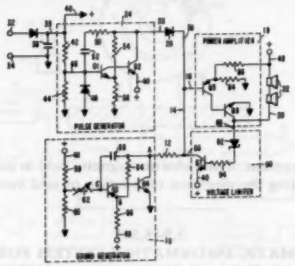
VEHICLE BACK-UP ALARM

Franklin D. Neal, and Raymond Mirly, both of Cape Girardeau, Mo., assignors to Raymond Mirly, Cape Girardeau, Mo.

Filed Oct. 29, 1974, Ser. No. 518,927

Int. Cl.[2] B60Q *3/00*

U.S. Cl. 340—384 E **4 Claims**



1. A backup alarm for vehicles for producing a pulsed audio signal, comprising:

sound generator means having an input and an output, said generator comprising an audio frequency oscillator producing audio frequency signals at its output;

means providing a variable time constant for for said audio frequency oscillator to vary the tone of said audio frequency signals;

blocking pulse generating means having an input and an output, said blocking pulse generating means comprising a sub-audio frequency oscillator producing periodic blocking pulses at its output;

amplifier means having an input and an output;

means connecting the output of said sound generator means to said amplifier input to apply said audio frequency signals to said amplifier means;

means connecting the outputs of said blocking pulse generating means and said sound generator means in parallel to said amplifier input and for connecting the output of said blocking pulse generator through a feedback loop to the input of said sound generator means, whereby the presence of a blocking pulse at the output of said blocking pulse generating means disables and amplifying means and said sound generator means;

sound producing means;

means connecting said amplifier output to said sound producing means, whereby said audio frequency output signals are amplified and applied to said sound producing means in the absence of said blocking pulses; and

voltage limiter means comprising negative feedback means connected between the output and the input of said amplifier means to regulate the voltage provided at said amplifier output so that said alarm is adaptable for use with a variety of vehicles, and is operable with various power supply voltages.

3,943,508

ELECTRONIC ROLL COMPENSATION SYSTEM FOR A RADAR ANTENNA

Robert J. Boucher, Los Angeles, and Robert L. Brackney, Jr., Whittier, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 25, 1971, Ser. No. 128,105

Int. Cl.[2] G01S *9/02, 9/22*

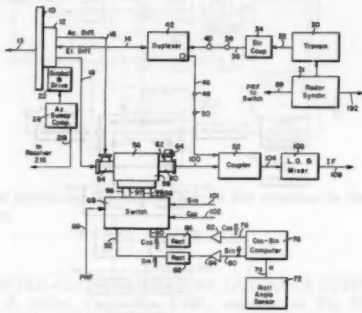
U.S. Cl. 343—5 R **10 Claims**

1. A roll angle correction system for a radar system operating at a pulse repetition frequency and having a modulator with a rotating field for space rotating received elevation and

azimuth difference signals, said modulator having azimuth and elevation poles to form a first group of azimuth and elevation poles and a second group of azimuth and elevation poles comprising

a source of roll angle signals having amplitudes representative of a roll angle correction,

computer means responsive to said source of roll angle signals for developing first and second roll correction signals,



and switching means coupled between said computer means and said first and second groups of azimuth and elevation poles and responsive to said pulse repetition frequency for applying said first and second roll correction signals alternately to said first and second groups for rotating the elevation and azimuth difference signals to correct for the roll angle.

3,943,509
NAVIGATION AIDING SYSTEMS WITH ONE-WAY RANGING AND TWO-WAY SYNCHRONIZATION

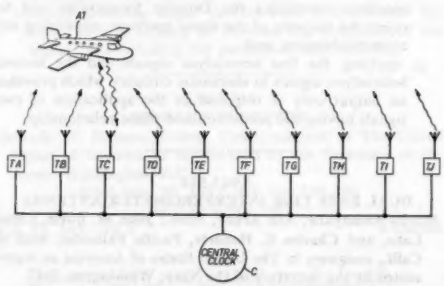
David Graham Pudsey, Rayleigh, England, assignor to Elliott Brothers (London) Limited, London, England

Filed Mar. 9, 1973, Ser. No. 339,585

Claims priority, application United Kingdom, Mar. 9, 1972, 10915/72

Int. Cl.² G01S 9/56

U.S. Cl. 343—6.5 R **11 Claims**



1. In a system for aiding navigation, the combination of:

a plurality of moving craft, each including transmitter means for transmitting an interrogation signal only once and at a fixed time within a particular time slot, which fixed time establishes an epoch for each craft which may differ from a master epoch, each craft transmitting during a different time slot within the master epoch;

at least one fixed station, including transmitter means for transmitting ranging signals at fixed times uniquely to define said master epoch and each time slot within it, and for transmitting a synchronizing signal within each time slot only in response to an interrogation signal; and

means at each craft for adjusting the time of transmission of each interrogation signal in response to said synchronizing signal, whereby the epoch established by each craft is adjusted to coincide in time with said master epoch, there being n time slots in each epoch whereby n moving craft may associate with the system.

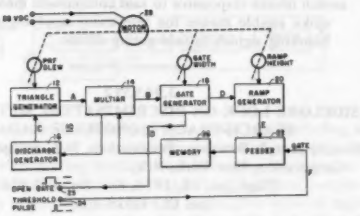
3,943,510
PULSE-REPETITION FREQUENCY DISCRIMINATOR (PRFD) FOR TRACKING RADAR SIGNALS

Criley Orton, Arlington, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 2, 1964, Ser. No. 401,767

Int. Cl.² G01S 7/28

U.S. Cl. 343—7 A **5 Claims**



1. In a pulse-repetition frequency discriminator, the combination comprising:

a. a pulse generator for generating pulses at a predetermined reference frequency,

b. a gate generator coupled to said pulse generator and being responsive to the generated pulses to generate a gate signal having a width of a predetermined percentage of the repetition period of the predetermined reference frequency,

c. ramp generator means coupled to said gate generator for converting said gate signal into a triangular shaped signal,

d. a normally closed gate circuit coupled to said ramp generator means and to an input terminal adapted to receive radar pulses of interest and being responsive to received radar pulses having a frequency within said gate signal to pass a portion of said triangular shaped signal,

e. circuit means having an input coupled to said normally closed gate circuit and having a reference voltage equal to one-half the amplitude voltage of said triangular shaped signal and having an output coupled to said pulse generator for feeding a corrective voltage proportional to the difference between the amplitude of the output voltage passed by said normally closed gate and said reference voltage to said pulse generator to change the PRF of said pulse generator in a direction to reduce said corrective voltage to zero.

3,943,511
SPIKE ENABLE CIRCUIT

Norol T. Evans, San Pedro, and Richard F. Hyneman, Fullerton, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

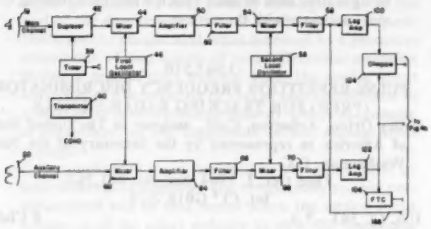
Filed May 31, 1974, Ser. No. 475,710

Int. Cl.² G01S 9/02

U.S. Cl. 343—7 A **16 Claims**

1. A pulse interference blanking system for operation in high-clutter environments for communications systems equipped with main and auxiliary channels and side-lobe blanking means having amplitude comparison means for comparing the amplitudes of the main and auxiliary channel signals and gating means for generating a blanking signal for blanking said main channel comprising:

spike enable means responsive to interference pulses with sharp leading edges in said auxiliary channel for generating a blanking signal; and



switch means responsive to said comparison means and said spike enable means for selectively applying one of said blanking signals to said gating means.

3,943,512

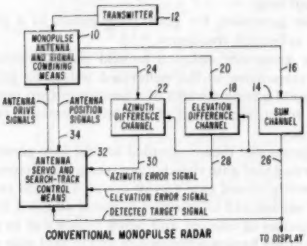
SIDELOBE LOCK-ON DISCRIMINATING METHOD FOR SEARCH-TRACK MONOPULSE RADAR

Donald Joseph Dempsey, Pennsauken, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 18, 1974, Ser. No. 434,374

Int. Cl.² G01S 9/22

U.S. Cl. 343—7.4 **4 Claims**



1. An operating method for a search-track monopulse radar having a mainlobe antenna pattern exhibiting a first angle-error gradient and a sidelobe antenna pattern exhibiting a second angle-error gradient different from said first angle-error gradient, at least one of said first and second angle-error gradients being known; said method comprising the steps of:

a. operating said radar in a search mode until said radar locks onto a detected target, and then

b. measuring the actual angle-error gradient of said locked-on target to indicate whether said target is locked on to said mainlobe or is locked on to said sidelobe.

3,943,513

SYSTEM AND METHOD FOR SELECTING DOPPLER ALTERED REFLECTED SIGNALS

Everett Eberhard, Tempe; Frank S. Gemmell, Scottsdale, and Randolph G. Moore, Phoenix, all of Ariz., assignors to Motorola Inc., Phoenix, Ariz.

Continuation of Ser. No. 367,087, June 4, 1973, abandoned. This application Jan. 13, 1975, Ser. No. 540,360

Int. Cl.² G01S 9/42

U.S. Cl. 343—7.7 **13 Claims**

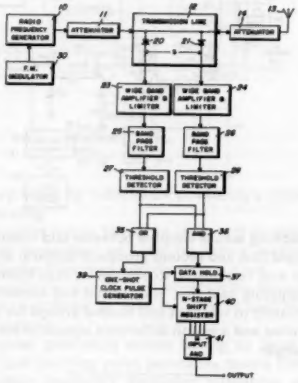
3. A method of transmitting a radio frequency signal and selecting a Doppler altered reflected signal from interfering signals comprising the steps of:

a. transmitting noise modulated radio frequency signals;

b. receiving Doppler altered reflected signals;

c. heterodyning the radio frequency signals and the reflected signals to provide first heterodyne signals;

d. altering the phase of receiving signals lying within a predetermined band of frequencies including the Doppler altered reflected signals and heterodyning the radio frequency signals and the reflected signals to provide second heterodyne signals having a predetermined phase relationship to the first heterodyne signals;



e. amplifying the first and second heterodyne signals in broad band amplifiers to distribute the signal energy across a broad spectrum;

f. filtering the first and second heterodyne signals in a narrow bandpass filter to pass that portion of the signal spectrum containing the Doppler frequencies and to reject the majority of the signal spectrum containing the noise modulation; and

g. applying the first heterodyne signals and the second heterodyne signals to electronic circuitry which provides an output only in response to the application of two signals having the predetermined phase relationship.

3,943,514

DUAL BASE LINE INTERFEROMETER ANTENNA

Marko Afendykiw, Ann Arbor, Mich.; John M. Boyle, China Lake, and Charles E. Hendrix, Pacific Palisades, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 23, 1970, Ser. No. 92,159

Int. Cl.² G01S 3/74, 9/02

U.S. Cl. 343—16 R **6 Claims**

6. A method of passively detecting and tracking a target comprising;

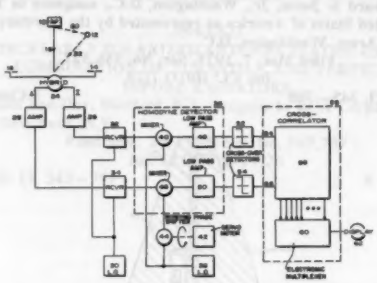
receiving signals directly from a radio frequency transmitting source-of-opportunity,

receiving signals reflected from a target illuminated by signals from said transmitting source-of-opportunity,

comparing a first set of said direct and reflected signals with a second set of said direct and reflected signals in order to measure the relative phase difference between said

sets, and

converting said relative phase difference into an angle value



for indicating the direction from the receiver to the target.

3,943,515

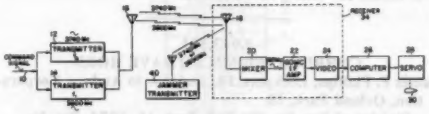
COUNTER-COUNTERMEASURE GUIDANCE SYSTEM

Frank P. Miley, Camarillo, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 24, 1962, Ser. No. 190,527

Int. Cl.² H04K *3/00*

U.S. Cl. 343—18 E **6 Claims**



4. A method of avoiding countermeasure jamming techniques comprising the steps of:

transmitting a signal over at least a pair of carrier waves which differ in frequency by a predetermined amount and receiving and beating the carrier waves one against the other to obtain an intermediate frequency wave having an envelope of said signal,

whereby jamming either carrier wave will enhance the effect of said beating to increase the amplitude of the signal, thus defeating the purpose of said jamming.

3,943,516

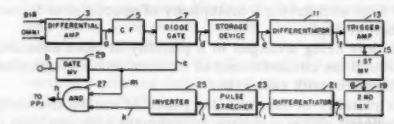
STROBE GENERATOR

Orlando W. Hanson, Goleta, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 20, 1962, Ser. No. 239,400

Int. Cl.² G01S *3/66*

U.S. Cl. 343—18 E **4 Claims**



3. A strobe generator for a radar set which includes a rotatable directional antenna, comprising; means to sweep said rotatable directional antenna past a source of enemy jamming signals, means to produce pulses of one polarity in response to increasing jamming signal strength on said antenna and pulses of the opposite polarity in response to decreasing jamming signal strength on said antenna, a monostable multivibrator, said pulses being applied to said monostable multivibrator being triggered only by said pulses of said one polarity, and means responsive to the cessation of pulse output from said monostable multivibrator to initiate a strobe pulse.

3,943,517

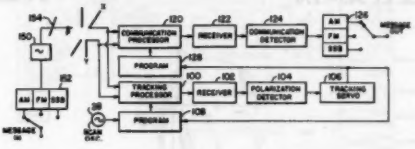
ADAPTIVE POLARIZATION RECEIVING SYSTEM

Gottfried F. Vogt, Lincroft, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 29, 1974, Ser. No. 518,449

Int. Cl.² H01Q *21/24*

U.S. Cl. 343—100 PE **3 Claims**



1. In a radio communication system of the type including a signal receiver, a pair of quadrature positioned cross dipole antennas for recovering intelligence information for reporduction by said receiver, and means for producing signal components of the angle of polarization of an incident wave of high frequency energy received thereby, the combination therewith of:

first polarization follower apparatus for providing a first, variable control signal that comprises a variable direct voltage superimposed onto an alternating signal to maintain the system phase angle in synchronization with the incident polarization angle of said high frequency wave; and

second polarization follower apparatus for providing a second variable control signal that comprises substantially only a variable direct voltage 90° displaced in phase with respect to said first control signal to decrease the sensitivity of said receiver to distortion in intelligence information due to undesired polarization modulation caused by perturbations in the propagation medium.

3,943,518

DOPPLER ILS RECEIVER WITH BEAT SIGNAL SCAN SYNCHRONIZATION

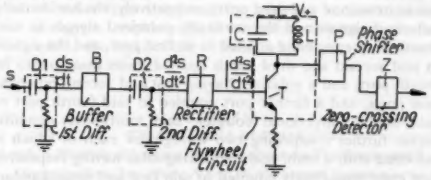
Paul Barton, Bishop Stortford, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed July 15, 1974, Ser. No. 488,565

Claims priority, application United Kingdom, July 19, 1973, 34454/73

Int. Cl.² G01S *1/18, 1/38*

U.S. Cl. 343—108 M **4 Claims**



1. A radio navigation receiver for use in a Doppler radio navigation system having a transmission format with digitized bidirectional scans, comprising:

first means within said receiver for deriving a Doppler beat information signal from the received signals;

second means comprising a flywheel circuit having a resonant frequency equal to the frequency of the scan, for determining the time at which the direction of each scan

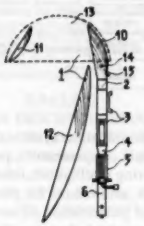
is reversed, said second means being responsive to said Doppler signal;
and third means synchronized by said second means for determining the frequency of said Doppler signal during each scan.

3,943,519

MULTIPLEXER-DEMULTIPLEXER FOR A MICROWAVE ANTENNA

Nhu Bui-Hai, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 6, 1975, Ser. No. 555,815
Claims priority, application France, Mar. 8, 1974, 74.07927
Int. Cl.² H04L 5/00
U.S. Cl. 343—176 6 Claims



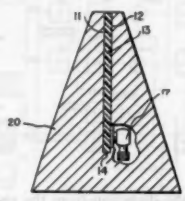
1. A multiplexer-demultiplexer for a microwave antenna designed to transmit signals in first, second, third and fourth frequency bands respectively comprised between 3.6 and 4.2 kmc, 5.9 and 6.4 kmc, 6.4 and 7.1 kmc and 10.7 and 11.7 kmc, said multiplexer-demultiplexer comprising: a coupling arrangement for receiving vertical and horizontal polarization signals and having a first port for coupling to an antenna, and a second port; a first directional coupler having a first port coupled to said second port of said coupling arrangement, and second and third ports and a second directional coupler having a first port coupled to said third port of said first directional coupler, and second and third ports, one of said directional couplers being designed to transmit to its second port the whole of the vertically-polarized signals in said first frequency band applied to its first port, and the signals in said second, third, and fourth bands applied to its first port to its third port, and the other of said directional couplers being designed to transmit to its second port the whole of the horizontally-polarized signals in said first frequency band applied to its first port, and the signals in said second, third and fourth bands applied to its first port to its third port; a double directional coupler having a first port coupled to said third port of said second directional coupler, and second, third and fourth ports, said double directional coupler being designed to transmit to its second and third ports, respectively, the horizontally polarized signals and the vertically polarized signals in said fourth frequency band applied to its first port, and the signals in said second and third bands applied to its first port to its fourth port; and a polarizer having first and second polarization ports, and a further port coupled to said fourth port of said double directional coupler; said multiplexer-demultiplexer further comprising two waveguides each of which is provided with a stub, said two waveguides having respective first ends respectively coupled to said first and second polarization ports of said polarizer and respective second ends; first and second Y-junctions having respective first ports respectively coupled to the second ends of said two waveguides, each of said Y-junctions having two further ports; a first band-pass filter having a first port coupled to one of said further ports of said first Y-junction; and a second band-pass filter having a first port coupled to one of said further ports of said second Y-junction.

3,943,520

NOSE CONE CAPACITIVELY TUNED WEDGE ANTENNA

Maurice Apstein; Frank Reggia, both of Bethesda, Md., and Howard S. Jones, Jr., Washington, D.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 7, 1975, Ser. No. 556,527
Int. Cl.² H01Q 1/28
U.S. Cl. 343—708 9 Claims



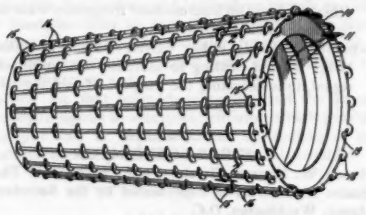
1. An antenna for use with metal nose cones comprising:
a. a wedge-shaped dielectric material having an electrical length of one-quarter wavelength measured inside the center line of the wedge;
b. metallic electrodes covering the top and bottom of said wedge to form a parallel plate radiator, said electrodes being connected across the base of said wedge to define an RF short circuit at the base;
c. an RF coupling probe extending into said wedge at a point adjacent said base; and
d. means for tuning said antenna.

3,943,521

CORRUGATED MICROWAVE HORN

James P. Phillips, Lockport, Ill., assignor to Andrew Corporation, Orland Park, Ill.

Division of Ser. No. 506,168, Sept. 16, 1974, Pat. No. 3,914,861. This application June 11, 1975, Ser. No. 585,974
Int. Cl.² H01Q 13/02
U.S. Cl. 343—786 6 Claims



1. A corrugated microwave horn comprising the combination of:
a. a thin sheet of conductive metal rolled into the shape of a horn and having a multiplicity of spaced slots formed therethrough,
said slots being arranged in a plurality of rows extending around the circumference of the horn and in longitudinal alignment with each other,
b. a plurality of thin annular plates of conductive metal disposed within said horn in alignment with said rows of slots,
each of said plates forming a multiplicity of integral tabs spaced around the outer periphery of the plate,
said tabs extending through the slots in said horn with the portions of the tabs projecting beyond the outer surface of the horn having apertures formed therethrough adjacent said outer horn surface,

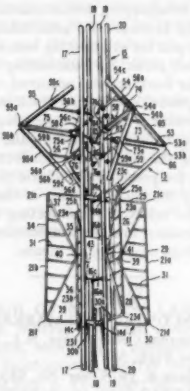
c. and a multiplicity of wires extending through the apertures in said tabs along the outer surface of the horn.

3,943,522

CIRCULARLY POLARIZED ANTENNA SYSTEM USING A COMBINATION OF TURNSTILE AND VERTICAL DIPOLE RADIATORS

Oded Ben-Dov, Medford, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 20, 1974, Ser. No. 507,707
Int. Cl.² H01Q 21/26
U.S. Cl. 343—797 6 Claims



1. A circularly polarized antenna system comprising:

a vertically oriented support tower,

four radiating elements mounted about the tower at 90° intervals with the elements extending from the tower and configured to excite horizontally polarized fields,

means for feeding signal energy at a first power level to said four radiating elements with equal power to each radiating element and in relative phase rotation of 0°, 90°, 180° and 270° in the manner of a turnstile,

four vertically oriented dipoles mounted to the tower with a vertically oriented dipole spaced vertically a given distance from each radiating element, said vertically oriented dipoles being electrically full wavelength dipoles and being arranged to present the aperture of a half wavelength dipole,

means for feeding equal signal energy to each of said four vertically oriented dipoles in relative phase rotation of 0°, 90°, 180° and 270°,

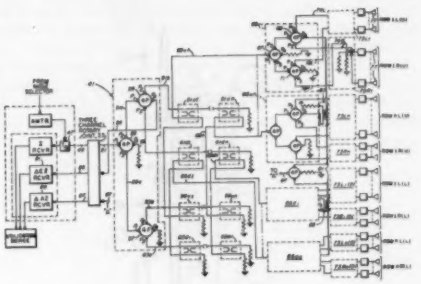
said four vertically oriented dipoles being spaced from each other and fed in an amplitude and phase relationship with respect to said four radiating elements to cause the horizontal pattern of the vertically polarized field associated with the vertical dipoles to be of similar shape and magnitude and in phase quadrature to the horizontal pattern of the horizontally polarized field associated with the four radiating elements.

3,943,523

AIRBORNE MULTI-MODE RADIATING AND RECEIVING SYSTEM

Matthew Fassett, Billerica, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Mar. 7, 1972, Ser. No. 232,404
Int. Cl.² H01Q 1/28, 3/26
U.S. Cl. 343—854 9 Claims



1. In a phased array antenna for a monopulse radar, the antenna elements in such antenna being arranged in *n* upper rows above a horizontal centerline and *n* lowers rows below such centerline, in each one of such rows there being an equal number of antenna elements to the left and to the right of a vertical centerline, a constrained feed for each one of the antenna elements, such feed comprising:

a. a waveguide ladder network, responsive to radio frequency energy to be transmitted, for dividing such energy into an upper and a lower pair of waveguides, the radio frequency energy in the upper pair to be divided between the antenna elements in the *n* upper rows and the radio frequency energy in the lower pair to be divided between the antenna elements in the *n* lower rows;

b. *n* waveguide-to-stripline couplers disposed along one waveguide in each pair thereof and *m* waveguide-to-stripline couplers disposed along the other waveguide in each pair thereof, where *m* is equal to, or less than, *n*,

c. 2*n* stripline ladder networks, each one thereof responsive to the radio frequency energy in a different one of the *n* upper and lower paths, for further dividing the radio frequency energy in each one of such paths into four serial feed striplines, a first pair of such striplines including a primary and a secondary feed directed toward the antenna elements to the left of the vertical centerline of a row of such elements and a second pair of such striplines including a primary and a secondary feed directed toward the antenna elements to the right of such centerline in the same row; and,

d. stripline coupling means, responsive to the radio frequency energy in each one of the first and the second pair of serial feed striplines, for coupling radio frequency energy to, respectively, the antenna elements to the left and to the right of the vertical centerline in each row of antenna elements.

3,943,524

TV ANTENNA SUPPORT

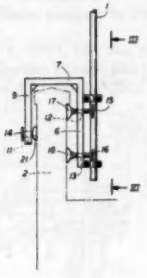
Louis J. Sample, Flushing, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Oct. 7, 1974, Ser. No. 512,702
Int. Cl.² H01Q 1/12
U.S. Cl. 343—888 1 Claim

1. A TV antenna support for mounting a TV antenna on a parapet, said antenna support comprising

a pair of substantially U-shaped members, each of the members having a pair of spaced substantially parallel arms joined by a head substantially perpendicular to the arms;

a pair of spaced substantially parallel cross-members connected to one arm of each of said pair of parallel arms and affixing the U-shaped members to each other in spaced substantially parallel inverted position, the cross-members being substantially perpendicular to the arms and heads of the U-shaped members and lying in a plane perpendicular to the planes of the U-shaped members;



antenna affixing means affixed to the cross-members for supporting a TV antenna in substantially upright position; and

fastening means on the arms of said members for affixing the members in inverse position on a parapet, said fastening means comprising a plurality of spaced internally threaded bores and wing bolts threadedly coupled in the bores and abutting both sides of the parapet via cup-like abutting components supported on said wing bolts.

3,943,525

INK PRINTER AND METHOD OF PRINTING WITH CAPILLARY CONTROL OF PRESSURISED INK

Stephen F. Skala, 3839 S. Wenonah, Berwyn, Ill. 60402

Filed Apr. 13, 1973, Ser. No. 350,943

Int. Cl.² G01D *15/16*

U.S. Cl. 346—1 **12 Claims**

1. In a method for printing by transmitting graphic information signals to a receiver having an ink capillary array spaced from a paper surface in an electrostatic field to induce travel of drops from selected capillaries in said array to such paper, the steps including

partly filling each capillary with a body of mercury,

developing a magnetic field in said capillary,

inducing electric current in said capillaries so the resultant force moves the mercury in the capillary to expose a communicating port, introducing ink to a capillary through the communicating port under sufficient pressure to cause said ink to flow from said capillary,

terminating the current flow and

moving the body of mercury under pressure to again partly fill the capillary and to close the communicating port.

3,943,526

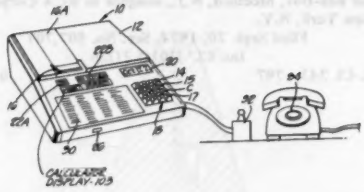
AUTOMATIC TIMEKEEPING AND ACCOUNTING UNIT

Eugene J. Albertini, Hidden Hills, and Max Lagomarsino, Canoga Park, both of Calif., assignors to Chronometrics, Inc., Los Angeles, Calif.

Filed Aug. 19, 1974, Ser. No. 498,639

Int. Cl.² G01D *3/10*

U.S. Cl. 346—25 **4 Claims**



1. An automatic timekeeping and accounting unit including a manually operated keyboard for establishing indicia representing an account and for establishing indicia representing a work activity; a clock means for establishing the time interval in which a particular work activity occurred; recording means coupled to said keyboard and to said clock means for recording the aforesaid indicia; register means coupled to said keyboard for storing the indicia representing the account and the indicia representing the work activity; electronic calculator and display means for presenting numeric solutions to problems established by manual actuation of the keyboard; and switching means for selectively connecting the keyboard to said electronic calculator and for simultaneously disconnecting the keyboard from said register means.

3,943,527

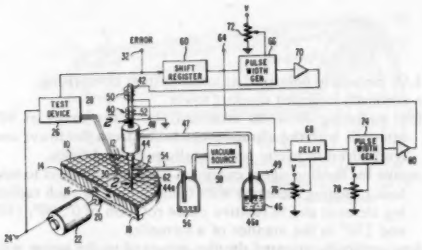
NONCONTACTING MARKER

John Charles Hartmann, Cedar Grove, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 4, 1975, Ser. No. 583,603

Int. Cl.² G01D *9/00, 15/18;* B67D *1/16*

U.S. Cl. 346—33 F **5 Claims**



1. A liquid marking device comprising, in combination:

means containing first, second and third interconnected apertures, said first aperture being coupled to a source of marking liquid, said second aperture being adapted to receive a plunger means, said third aperture forming a nozzle;

a plunger residing in said second aperture forming a liquid receiving chamber therein, said plunger being movable between two positions, the first being such as to increase the volume of said chamber, the second being such as to reduce the volume of said chamber and to close the interconnection between said first and second apertures;

first power driven means coupled to said plunger for moving said plunger to said first position for receiving said marking liquid in said chamber; and

second power driven means for moving said plunger to said second position for forcing said liquid to be ejected from said nozzle.

3,943,528

METHOD FOR PRODUCING AN IMAGE USING PERSISTENT ELECTROCHROMIC MATERIALS

Don L. Camphausen, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 25, 1974, Ser. No. 463,928
Int. Cl.² G03G *13/052*; G01D *15/06*
U.S. Cl. 346—74 E **19 Claims**

1. An imaging method which comprises:

a. providing a receiving member comprised of a solid state persistent electrochromic material uniformly distributed upon a substrate of a surface material which has a resistivity substantially greater than the electrochromic material on a ground plane; said surface material being a material which becomes more conductive upon being heated and is returned to its original state of resistance by cooling,

b. treating the surface material by heating it to increase its conductivity and thereby reduce its resistance to a level less than or about equal to that of the electrochromic material;

c. passing an electrical current through the electrochromic material by creating a potential between a movable electrode and the ground plane and moving the electrode in imagewise configuration to thereby form an image in the electrochromic material; and

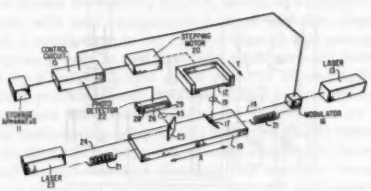
d. converting the surface material back to its original state of resistance greater than that of the electrochromic material by cooling it.

3,943,529

CONTROL OF SCANNING LASER BEAM

Martin Feldman, Murray Hill, and Joseph Michael Moran, Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 6, 1975, Ser. No. 547,555
Int. Cl.² G01D *9/42*; H04N *3/00*; B23K *9/00*
U.S. Cl. 346—108 **14 Claims**



1. An apparatus in which a pattern is formed by raster scanning of a writing beam of radiant energy over a substrate surface, including means for providing relative reciprocating movement between the beam and surface in an *x* direction, and means for providing relative movement in a *y* direction orthogonal to the *x* direction, whereby the pattern is defined by the forming of successive scan lines on the surface, the improvement comprising:

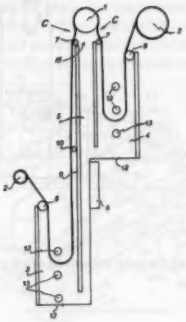
means for forming *n* scan lines on the surface, where *n* is a number greater than one, comprising means for deflecting the beam along a line at an angle of substantially arccot (1/n) with respect to the *x* direction and sequentially forming n spots of said n scan lines, said deflecting means being responsive to the velocity of said relative *x* direction movement.

3,943,530

TRACING APPARATUS WITH SUCTION PAPER CONTROL MEANS

Jean Mourier, Savigny-sur-Orge, France, assignor to Benson, Creteil, France

Filed Aug. 13, 1974, Ser. No. 497,041
Int. Cl.² G01D *15/28*
U.S. Cl. 346—136 **3 Claims**



1. In a tracing apparatus functioning automatically on the basis of digital inputs comprising:

a tracer head,

a paper band control drum,

paper band winding-unwinding means having two winding-unwinding rolls positioned on either side of said control drum,

suction means for assisting the formation of two buffer-loops,

two chambers receiving said buffer-loops and connected to said suction means, said control drum being located between said chambers,

loop reader-corrector means provided in each of said chambers,

a central suction slot extending underneath, all along said control drum and parallel therewith,

a roll disposed on each longest side of said suction slot so as to establish a line of leakproofness between it and the paper band,

whereby two sags are freely formed in the paper band beneath and on either side of said control drum, the paper band being thus wrapped to the maximum around said control drum.

3,943,531

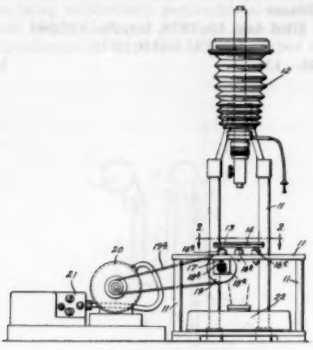
APPARATUS AND METHOD FOR PRODUCING RING PATTERNS FROM ELECTRON DIFFRACTION SPOT PATTERNS

Dorothy F. O'Reilly, Claymont; James J. Byrd, Wilmington, both of Del., and Allan T. Finlayson, West Chester, Pa., assignors to Sun Ventures, Inc., St. Davids, Pa.

Filed July 18, 1974, Ser. No. 489,626
Int. Cl.² G03B *29/00*
U.S. Cl. 354—76 **1 Claim**

1. An apparatus for producing ring patterns from an electron diffraction spot pattern which comprises in combination, a frame supporting a rotatably mounted transparent disc having a center hole for centering an electron diffraction spot pattern negative on said disc, rim drive means for said disc, a light source mounted on said frame beneath said disc and

directed upwardly at said disc, and photographic means mounted on said frame above said disc to photograph the ring



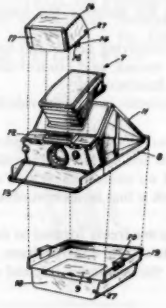
pattern generated when said mounted spot pattern negative is revolved.

3,943,532

FLASH ATTACHMENT FOR SELF-DEVELOPING COLLAPSIBLE CAMERAS

John De Filippis, South Amboy, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed June 25, 1974, Ser. No. 482,928
Int. Cl.² G03B 15/05
U.S. Cl. 354—126 2 Claims



1. In an improved electronic flash unit for a collapsible camera containing a self-developing film pack, said unit of the type including a flash lamp positioned above the camera lens and a power pack below the camera lens, wherein the improvement comprises:

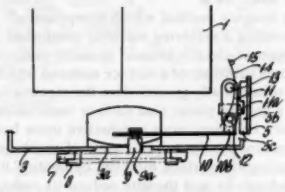
means for mounting the power pack flush with the bottom of the camera, said mounting means being integrally formed with the power pack for providing connection with said camera when said camera is in both a collapsed inoperative position and an open operative position, said means including engaging members extending from the top of the power pack and engaging the bottom sides of the camera to provide press fit retention between the power pack and the camera.

3,943,533

LOCKING MECHANISM FOR INTERCHANGEABLE PENTAPRISM VIEW FINDER IN SINGLE LENS REFLEX CAMERA

Tetsuji Shono, Saitama, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 13, 1974, Ser. No. 505,714
Claims priority, application Japan, Sept. 20, 1973, 48-110017
Int. Cl.² G03B 19/12
U.S. Cl. 354—156 7 Claims



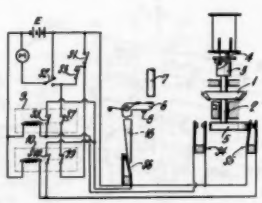
7. A disengagement means for single lens reflex camera with interchangeable view finder in which, corresponding to an engagement part (5*b*) provided on the camera main body, the view finder section is provided with an engaging member (11) which is urged in the direction of engagement, a rotatable disengagement ring (7) is provided around the eyepiece ring (8) of the view finder, and the engagement member (11) and the disengagement ring (7) are coupled by a motion transmission mechanism to each other through the cover of the view finder section.

3,943,534

SAFETY MECHANISM IN MOTOR DRIVEN CAMERA FILM TAKE-UP

Akihiro Arai, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 17, 1973, Ser. No. 380,048
Claims priority, application Japan, July 27, 1972, 47-74609
Int. Cl.² G03B 17/42
U.S. Cl. 354—173 8 Claims



1. A safety mechanism in an electric motor driven camera for stoppage of release action in the absence of the advance of a full frame of film, said safety mechanism comprising

1. a first means for film take-up and shutter charge,
2. a second means for shutter release,
3. a release circuit including an electric motor for driving said shutter release means, a current source for said motor, a selectively operable first switch for shutter release and an automatic stop switch connected in series with said first switch and which upon completion of the take-up action stops the current supply for the film take-up action and preparatory action for the take-up action, and
4. a take-up circuit including said current source and said motor for driving said first means, and a second switch which is opened through the first means by an increase in the film winding force closed in driving connection with

said second means and stopping said motor when the film is exhausted.

3,943,535

FILM CASETTE

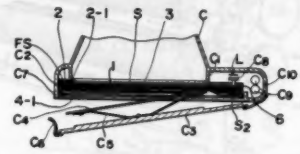
Yoshio Asano, Hyogo, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 19, 1973, Ser. No. 426,418

Claims priority, application Japan, Dec. 20, 1972, 47-127943

Int. Cl.² G03B *19/10*

U.S. Cl. 354—174 **4 Claims**



1. A film cassette for containing film-sheets each having an engagement hole near one corner thereof, comprising a front frame having an off-center opening therethrough with which the film surfaces of successive foremost film-sheets in the cassette are brought into alignment and are exposed to light therethrough and a notch extending from one side in alignment with said film sheet engagement holes, and through which a pawl means provided in a camera is passed to engage the hole of the foremost film sheet in the cassette and to draw the foremost sheet out of the cassette; a rear frame corresponding in size to said front frame, having an opening therethrough which permits a pressure means provided in the camera to pass therethrough and apply forward pressure on the film-sheet in the cassette, top, bottom and first side walls integrally formed with said rear frame and extending forward to said front frame and attached thereto, a second side wall integrally formed with said rear frame and extending to the proximity of said front frame, to form a passage through which successive foremost film-sheets are removed from the cassette; a first light-proof element provided inside said front frame to seal the opening thereof, having an engagement hole aligned with said engagement hole of said film sheets and which is removed from the cassette through said passage, said engagement hole in said first light proof element being covered by a patch of light proof paper; a second light-proof element provided inside said rear frame to seal the opening thereof, and which is moved forward by said pressure means of the camera; and a flap having length and width dimensions greater than said passage and pivotally attached to the exterior of said second side such that said flap normally covers said passage to prevent the entrance of light into said cassette, but is pivotable to allow the exit of the foremost film sheet from the cassette.

3,943,536

SIMPLIFIED CAMERA

Shigeru Oshima, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

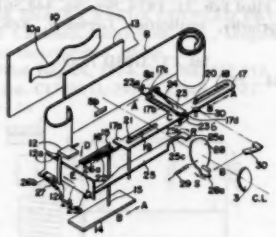
Filed July 15, 1974, Ser. No. 488,863

Claims priority, application Japan, July 23, 1973, 48-83462

Int. Cl.² G03B *17/42*

U.S. Cl. 354—204 **2 Claims**

1. In a simplified camera comprising a lens system, shutter means for selectively preventing and permitting passage of light through said lens system, a moveable shutter button for actuation of said shutter means, a film loading chamber for reception of unexposed film, a film wind-up chamber for reception of exposed film, a film loaded therein, said chambers being provided on opposite sides of a rear portion of said photographic means, a film guide passageway connecting said chambers, an exposure frame formed in the front wall of said passageway, between said chambers, and a pressure means provided behind and in line with said exposure frame, and exerting forwards pressure on successive frames of a film passed through said passageway, an improvement thereof comprising a shutter actuation plate reciprocally slidable along a line parallel to film advance, means exerting a constant force to move said shutter actuation plate in a direction opposite to film advance and to an uncocked position, a film advance lever, means supporting said film advance lever on said shutter actuation plate for movement with said shutter actuation plate along a line parallel to film advance to a cocked or uncocked position and for slidable movement in a direction normal to film advance towards and away from said



film for engaging successive perforations of said loaded film, baising means urging said film advance lever towards said loaded film, and a release lever operably connected with said shutter button, and operable upon actuation of said shutter button to disengage said film advance lever from a film perforation against said biasing means when said shutter actuation plate and said film advance lever are in cocked positions, said shutter actuation plate being movable to a cocked position and said film advance lever being carried therewith to advance said film one frame, means including said film advance lever engaging a perforation of said film for holding said shutter actuation plate in cocked position, whereby, when said shutter button is actuated, said release lever disengages said film advance lever from said perforation, and said shutter actuation plate returns to an uncocked position, and actuates said shutter means to expose a film frame.

3,943,537

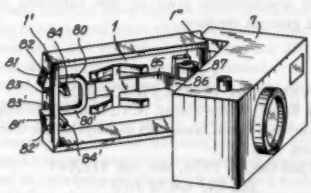
LOCKING MEANS FOR CAMERA

Karl Heinz Lange, Bunde, Germany, assignor to Balda-Werke, Bunde, Germany

Filed July 10, 1974, Ser. No. 487,079

Int. Cl.² G03B *17/02*

U.S. Cl. 354—288 **16 Claims**



1. In an apertured rear cover for a film camera of the type including a camera housing for an objective, a viewer and a film load, said rear cover defining a plane and having a film viewing window secured in said cover aperture said rear cover

being fitted to said camera housing and having an end pivotably connected to said housing and another end connectable to said camera housing, an improved locking means for releasably securing said rear cover at its connectable end to said camera housing comprising biasing means integrally connected to said viewing window in said rear cover and latch means cooperating with said biasing means for releasably connecting said connectable end of said rear cover to said camera housing.

3,943,538

DEVELOPING APPARATUS WITH AUTOMATIC TEMPERATURE CONTROL

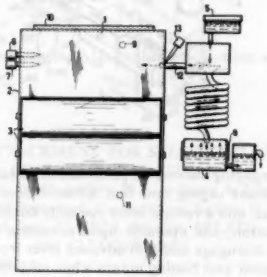
Horst Hilgers, Bad Schwalbach-Heimbach, and Herbert Schröter, Taunusstein, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Feb. 21, 1974, Ser. No. 444,561

Claims priority, application Germany, Feb. 24, 1973, 2309303

Int. Cl.² G03D *13/00*

U.S. Cl. 354—299 **8 Claims**



1. Apparatus for developing light-sensitive material with a gaseous medium having a predetermined dew point comprising developing station means in communication with vaporizer means, at least one heating means in each of said developing station means and vaporizer means, at least one temperature control means inside said developing station means, said temperature control means being connected to the heating means in the developing station means and said heating means in said vaporizer means, said temperature control means being adjusted to control the heating of the developing station means to a predetermined temperature exceeding the dew point of the gaseous medium, whereby in said developing station means any condensation is prevented, said control means at a certain temperature in said developing station means actuating said heating means in said vaporizer means, said certain temperature being lower than said predetermined temperature, and said developing station means attaining its predetermined temperature prior to the vaporizer means producing the gaseous medium.

3,943,539

VERTICAL PLATE PROCESSOR

Delos Edward Bown, White Plains, N.Y., and James Marriott Graves, Stamford, Conn., assignors to Polychrome Corporation, Yonkers, N.Y.

Filed Oct. 2, 1974, Ser. No. 511,147

Int. Cl.² G03D *3/00*

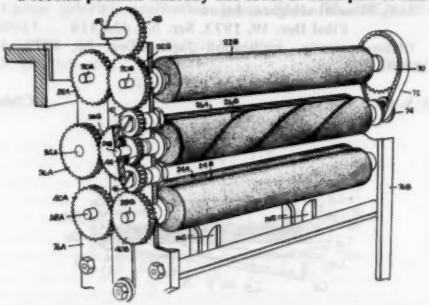
U.S. Cl. 354—302 **21 Claims**

1. Apparatus for developing an offset printing plate, comprising:

a tank containing a developing solution, said tank being open at the top to provide both inlet and outlet means for said plate;

at least one pair of transport rollers for transporting said plate between said rollers and out of said developing solution, said transport rollers being mounted in the upper portion of said tank;

means for separating said transport rollers from a first position whereby said rollers contact and drive said plate to a second position whereby one roller of each pair of said



transport rollers is separated from the other roller of that same pair by a predetermined amount to permit said plate to be inserted down between said transport rollers and into said tank; and brush means for applying developing solution over the surfaces of said plate; and

drive means for rotating said transport rollers for automatically delivering said plate up out of said tank.

3,943,540

PHOTOGRAPHIC DEVELOPING APPARATUS

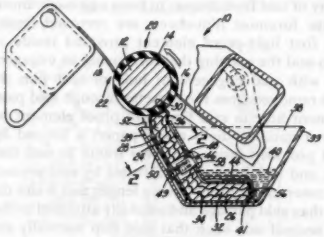
Robert Louis Marie Vanderheyden, Zonhoven, Belgium, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Apr. 25, 1974, Ser. No. 464,092

Claims priority, application Belgium, Apr. 24, 1974, 814086

Int. Cl.² G03D *5/00*

U.S. Cl. 354—318 **4 Claims**



1. In a developing apparatus for developing two-component diazotype materials by the application thereto of a controlled amount of liquid developer comprising an applicator roller, means for metering an excess amount of liquid carried on said applicator roller to establish a metered liquid zone thereon, and liquid supply means for applying said excess amount of liquid to the applicator roller and recovering any excess liquid, the improvement comprising:

a reservoir having a floor and a wall portion adjacent said applicator roller for holding a supply of said liquid;

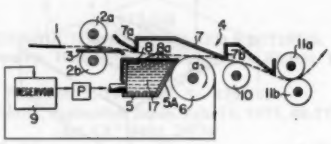
a liquid supply element partially immersed in said reservoir comprising a core of fibrous matted material capable of absorbing said developing liquid, at least a portion of said core being arranged to contact the applicator roller, and a sheath of porous, liquid absorbing material enclosing at least that portion of the core arranged to contact said applicator roller; and

clamping means for securing said liquid supply element in an upstanding condition against said wall portion including a spacer means disposed between the wall portion and said supply element forming a channel therebetween for guiding any liquid flowing from said applicator roller in advance of said liquid supply means for collecting and directing said recovered liquid into said reservoir.

3,943,541
LIQUID DEVELOPING APPARATUS FOR ELECTROPHOTOGRAPHY

Van Hirafuji, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Oct. 11, 1973, Ser. No. 405,438
Claims priority, application Japan, Oct. 21, 1972, 47-105704
Int. Cl.² G03D 5/00
U.S. Cl. 354—318 **9 Claims**

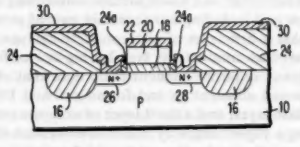


1. A developing apparatus for electrophotography comprising:
a. means for supplying a developing solution;
b. tank means, having at least one side wall, for holding the developing solution supplied by said supplying means and including at its top an apertured plate having an upper surface and a multiplicity of small apertures formed therein to permit the developing solution to flood through the apertures onto said upper surface in a uniform manner;
c. a developing roller located adjacent to the tank means with its surface disposed for directly receiving the flooding developing solution from said upper surface of the apertured plate and rotating at a peripheral speed greater than the speed at which a copy sheet having a surface to be developed is passed thereby; and
d. a guide means for constraining the copy sheet so as to maintain the surface to be developed thereon in contact with the developing solution on the upper surface of the apertured plate and the surface of the roller while the sheet is being passed thereby.

3,943,542
HIGH RELIABILITY, LOW LEAKAGE, SELF-ALIGNED SILICON GATE FET AND METHOD OF FABRICATING SAME

Irving T. Ho, and Jacob Riseman, both of Poughkeepsie, N.Y., assignors to International Business Machines, Corporation, Armonk, N.Y.

Filed Nov. 6, 1974, Ser. No. 521,423
Int. Cl.² H01L 29/78
U.S. Cl. 357—23 **7 Claims**

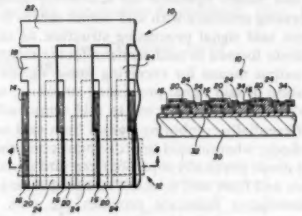


1. A field effect transistor comprising:
a. a layer of monocrystalline silicon of a first type conductivity,
b. diffused drain and source regions of a second type conductivity, opposite said first type, said diffused drain and source regions formed in the surface of said monocrystalline silicon layer and separated from one another by a portion of said layer of first type conductivity, and
c. a gate structure covering said portion, said gate structure comprising a thin oxide insulating layer in contact with said surface between said drain and source diffusions, a conductive polysilicon gate electrode covering said thin oxide insulating layer, and a layer of silicon nitride covering said polysilicon which overlies said portion.

3,943,543
THREE LEVEL ELECTRODE CONFIGURATION FOR THREE PHASE CHARGE COUPLED DEVICE

John Millard Caywood, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 26, 1974, Ser. No. 492,111
Int. Cl.² H01L 29/78, 23/48, 29/44
U.S. Cl. 357—24 **12 Claims**

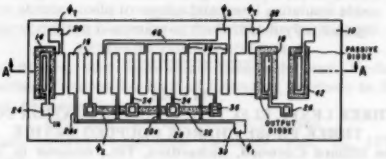


1. An electrode configuration for a three-phase charge coupled device having a channel defined in a semiconductor body and an insulating layer overlying said channel, comprising:
a first phase bus disposed along one side of the channel and including first spaced apart phase electrodes which are disposed on said insulating layer and span the channel,
a second phase bus disposed parallel to the side of said first phase bus and more remote from the channel and including second spaced apart phase electrodes which extend over said first phase bus in insulated relationship therewith and are disposed on said insulating layer and span the channel,
a third phase bus disposed parallel to the side of said second phase bus and more remote from the channel and including third spaced apart phase electrodes which extend over said first and second phase buses, are disposed on said insulating layer and span the channel,
ones of said first, second and third phase electrodes being sequentially positioned along the channel and insulated from each other to define bridge regions of said charge coupled device, and wherein each said phase electrode has an integral marginal edge portion spanning the channel in overlying relation with an upper surface of one of said first electrodes, and each said third phase electrode has an integral marginal edge portion spanning the channel in overlying relation with at least one of said first and second phase electrodes, and including insulation material between laterally adjacent and superposed portions of said first, second and third phase electrodes.

3,943,544
METAL-INSULATOR-SEMICONDUCTOR STRUCTURE HAVING MEANS FOR CANCELING NOISE

James D. Awtrey, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 347,259, April 2, 1973, abandoned. This application Nov. 11, 1974, Ser. No. 522,658
Int. Cl.² H01L 29/78
U.S. Cl. 357—24 9 Claims

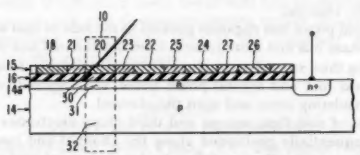


1. An improved semiconductor device comprising a semiconductor substrate incorporating a conductor-insulator-semiconductor signal processing structure wherein multiphase clock lines are utilized to control transfer of data signals from one location in said signal processing structure to another spaced location in said structure, said other location comprising output means incorporated in said semiconductor substrate, and means operable for selectively coupling said signal processing structure with said output means for transfer of data from said signal processing structure to said output means; a diode formed in said semiconductor substrate adjacent said output means for receiving noise signals resulting from operation of said signal processing structure; and differential amplifier means connected to said semiconductor device for differentially combining signals from said output and from said diode; wherein said improvement comprises formation of said diode physically separate from said signal processing structure and from said selective coupling means such that said semiconductor substrate provides the only electrical coupling between said diode and said signal processing structure and such that said diode is effective without application of an external control signal thereto to provide an output signal corresponding substantially to noise signals propagated to said diode through said semiconductor substrate during operation of said signal processing structure.

3,943,545
LOW INTERELECTRODE LEAKAGE STRUCTURE FOR CHARGE-COUPLED DEVICES

Choong-Ki Kim, Seoul, South Korea, assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed May 22, 1975, Ser. No. 580,114
Int. Cl.² H01L 29/78, 29/04
U.S. Cl. 357—24 6 Claims



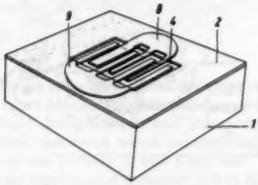
1. In a charge-coupled device having a semiconductor substrate, a layer of insulation covering said substrate, a plurality of spaced-apart electrodes formed from a doped polycrystalline semiconductor material on said layer of insulation and having a particular conductivity type, and regions of polycrystalline semiconductor interelectrode material located between said plurality of spaced-apart electrodes, and means connected to said electrodes for forming a spatially defined depletion region in said substrate beneath said electrodes and for transferring charge from one location to another in said depletion region, the improvement comprising:

said polycrystalline semiconductor interelectrode material contains a dopant which gives to said polycrystalline semiconductor interelectrode material a conductivity type opposite to said particular conductivity type.

3,943,546
TRANSISTOR

Reinhold Kaiser, Heilbron, Germany, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm, Germany

Division of Ser. No. 845,773, July 29, 1969, Pat. No. 3,673,012. This application Dec. 21, 1971, Ser. No. 210,458
Claims priority, application Germany, Aug. 1, 1968, 1764766
Int. Cl.² H01L 29/72
U.S. Cl. 357—36 7 Claims

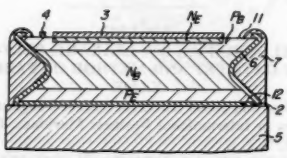


1. In a transistor formed in a semiconductor body, said transistor having at least three individual strip-like emitter zones formed in a single base zone and extending to a single major surface of said semiconductor body, the improvement wherein each of said strip-like emitter zones has a width different from the widths of the other emitter zones.

3,943,547
SEMICONDUCTOR DEVICE

Takahiro Nagano; Tatsuya Kamei, and Takuzo Ogawa, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Continuation-in-part of Ser. No. 207,878, Dec. 14, 1971, abandoned. This application Dec. 3, 1973, Ser. No. 421,265
Claims priority, application Japan, Dec. 26, 1970, 45-118708
Int. Cl.² H01L 29/743, 29/06
U.S. Cl. 357—38 12 Claims



1. In a semiconductor device of a high blocking voltage comprising: a semiconductor substrate having a pair of mutually opposing principal surfaces disposed substantially in parallel with each other and a side surface connecting the principal surfaces and including between said pair of principal surfaces at least a first layer of one conductivity type, a second layer of the other conductivity type having in a uniform distribution a lower impurity concentration than that of said first layer, disposed adjacent to and forming a first PN junction with said first layer, and a third layer of said one conductivity type having a higher impurity concentration than that of said second layer, disposed adjacent to and forming a second PN junction with said second layer, said first and second PN junctions being exposed at said side surface, said side surface

being formed into a pulley-shape the valley portion of which is located substantially at the middle of said second layer; a cover member of a high dielectric constant filling up the valley portion of the pulley shape; and a pair of main electrodes provided respectively in ohmic contact with said principal surfaces, in which the greater part of a depletion layer produced when the first or second PN junction is reversely biased exists in said second layer and spreads beyond said valley portion; the improvement comprising the fact that said pulley shape of the side surface satisfies the condition

$$10^{0.428 \times (\log \epsilon)^2 + 0.0133 \times \log \epsilon - 0.783} d/w,$$

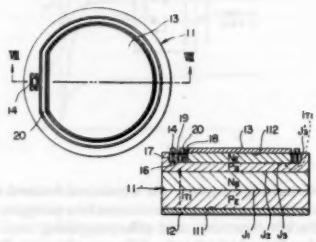
where d represents the depth of the valley portion, w the thickness of the semiconductor substrate, and ϵ the specific dielectric constant of the atmosphere around the valley portion, and wherein the ratio d/w of the valley depth to the substrate thickness is not larger than unity.

3,943,548

SEMICONDUCTOR CONTROLLED RECTIFIER

Yoshio Terasawa, Hitachi, Japan, assignor to Hitachi, Ltd., Japan

Filed Feb. 5, 1974, Ser. No. 439,698
Claims priority, application Japan, Feb. 14, 1973, 48-17478
Int. Cl.² H01L 29/74
U.S. Cl. 357—38 **8 Claims**



1. A semiconductor controlled rectifier comprising:

a semiconductor substrate with first and second principal surfaces opposite each other, said semiconductor substrate including four continuous layers of alternately different conductivity types between said first and second principal surfaces so that *pn* junctions are formed between each two adjacent layers, the entire end of the *pn* junction formed between a first outermost layer and a first intermediate layer adjacent to said first outermost layer being exposed at said first principal surface, said first outermost layer and part of said first intermediate layer constituting said first principal surface, first and second auxiliary regions being formed in said first intermediate layer to the depth of said first outermost layer and having a conductivity type opposite that of said first intermediate layer, said first and second auxiliary regions being spaced apart from and facing each other and extending along the marginal edge of said first outermost layer and spaced apart from said first outermost layer and exposed at said first principal surface, said first outermost layer being closer to said first auxiliary region than to said second auxiliary region, third and fourth auxiliary regions being formed between said first outermost layer and said first auxiliary region in said first intermediate layer to the depth of said first outermost layer and having a conductivity type opposite that of said first intermediate layer, said third and fourth auxiliary regions being spaced apart from and facing each other and extending along the marginal edge of said first outermost layer and spaced apart from said first outermost layer and exposed at said first principal surface, said first outermost layer being closer to said third auxiliary region than to said fourth auxiliary region, and a second outermost layer constituting said second principal surface;

a first main electrode in ohmic contact with said first outermost layer on said first principal surface;

a second main electrode in ohmic contact with said second outermost layer on said second principal surface;

a conductor in electrical contact with said first auxiliary region, said second auxiliary region and that portion of said first intermediate layer which lies between said first and second auxiliary regions on said first principal surface; and

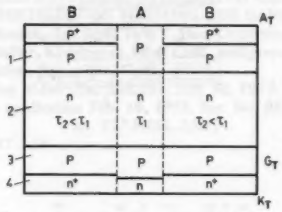
an auxiliary electrode in electrical contact with said third auxiliary region, said fourth auxiliary region and that portion of said first intermediate layer which lies between said third and fourth auxiliary regions on said first principal surface.

3,943,549

THYRISTOR

Andre A. Jaecklin, Ennetbaden; Josef Cornu, Staretschwil, and Manfred Lietz, Wurenlos, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Continuation of Ser. No. 336,555, Feb. 28, 1973, abandoned. This application Dec. 5, 1974, Ser. No. 529,955
Claims priority, application Switzerland, Mar. 15, 1972, 3766/72
Int. Cl.² H01L 29/74
U.S. Cl. 357—38 **4 Claims**



1. A thyristor having improved high frequency response and optimum current distribution comprising:

at least first and second adjacent sequences of semiconductor zones,

an electrode engaging both said first and second sequences of semiconductor zones,

both said first and second sequences of semiconductor zones including centrally located base zones and further including outer zones on either side of said base zones,

said base zones in said first sequence of semiconductor zones formed of a material having a first charge carrier lifetime,

said base zone in said second sequence of semiconductor zones formed of a material having a second charge carrier lifetime, said first charge carrier lifetime being greater than said second charge carrier lifetime; and,

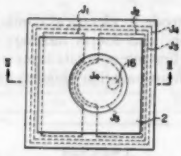
said outer zones in said first sequence of semiconductor zones including regions of lower doping concentration than corresponding regions of outer zones in said second sequence of semiconductor zones,

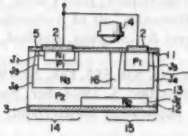
whereby said first sequence of semiconductor zones is more easily fired than said second sequence of zones and said fired state readily penetrates said second sequence of semiconductor zones to provide improved high frequency response and optimum current distribution.

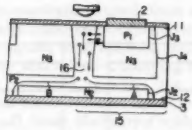
3,943,550
LIGHT-ACTIVATED SEMICONDUCTOR-CONTROLLED RECTIFIER

Nobutake Konishi; Tsutomu Yatsuo; Tatsuya Kamei; Masahiro Okamura, and Takuzo Ogawa, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 19, 1974, Ser. No. 534,373
Claims priority, application Japan, Dec. 24, 1973, 48-143486; Jan. 7, 1974, 49-4966
Int. Cl.² H01L 29/74
U.S. Cl. 357—38 8 Claims







1. A light-activated type semiconductor-controlled rectifier device comprising:

a semiconductor substrate including a couple of first and second main surfaces located opposedly to each other, four continuous layers of alternately different conductivity, adjacent ones of said four layers forming a plurality of PN junctions between said two main surfaces, said first main surface including at least the exposed surfaces of a first outer layer and a couple of intermediate layers, said second main surface including at least the exposed surfaces of a second outer layer and an intermediate layer adjacent to said second outer layer;

a first main electrode disposed on said first main surface and in ohmic contact with at least said first outer layer;

a second main electrode disposed on said second main surface and in ohmic contact with said second outer layer and said intermediate layer adjacent to said second outer layer;

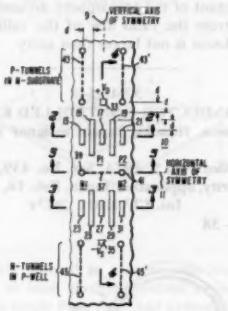
means for radiating a photo-trigger signal on that part of said intermediate layer adjacent to said second outer layer which is exposed to said first main surface, said photo-trigger signal firing said device; and

means for causing a photo current produced in said intermediate region adjacent to said second outer layer by radiation of said photo-trigger signal to flow along that part of a PN junction between said second outer layer and said intermediate layer adjacent to said second outer layer which is parallel to said second main surface.

3,943,551
LSI ARRAY USING FIELD EFFECT TRANSISTORS OF DIFFERENT CONDUCTIVITY TYPE

Gordon Edward Skorup, Marlton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 10, 1974, Ser. No. 459,599
Claims priority, application United Kingdom, Apr. 30, 1973, 20550/73
Int. Cl.² H01L 27/02, 29/78, 29/34
U.S. Cl. 357—42 13 Claims



1. A cell having a surface on which are formed contacts adapted to receive different interconnection patterns for producing different functions, said cell comprising:

a first plurality of transistors of first conductivity type, and a second plurality of transistors of second conductivity type; each one of said transistors having first and second regions defining the ends of a conduction path and a control electrode for controlling the conductivity of the conduction path; the first and second regions of the transistors of said first conductivity type being physically located to have their conduction paths lying end-to-end, and the first and second regions of the transistors of said second conductivity type being physically located to have their conduction paths lying end-to-end;

a first set of said contacts, connected to the first and second regions of said first plurality of transistors;

a second set of said contacts connected to the first and second regions of said second plurality of transistors; the first and second regions of each transistor being connected to different contacts, with adjacent transistors of the same conductivity type having a common region connected to a contact;

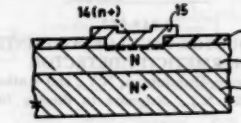
two additional contacts, one being designated as a first power contact and the other being designated as a second power contact for the application therebetween of an operating potential for the cell, said first and second power contacts being associated with and disposed adjacent to and apart from said first and second sets of contacts, respectively; and

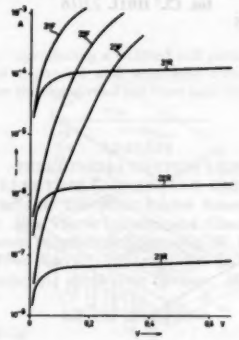
said first power contact and the contacts for said first plurality of transistors forming a pattern which is the mirror image of the pattern formed by said second power contact and the contacts for said second plurality of transistors with respect to a plane of symmetry lying between said first and second plurality of transistors.

3,943,552
SEMICONDUCTOR DEVICES

John Martin Shannon, Whyteleafe, and Julian Robert Anthony Beale, Redhill, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 18, 1974, Ser. No. 480,540
Claims priority, application United Kingdom, June 26, 1973, 30179/73
Int. Cl.² H01L 29/48
U.S. Cl. 357—15 7 Claims





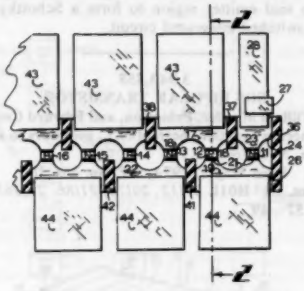
1. A semiconductor device comprising a semiconductor body having a semiconductor body portion with a conductivity type determining impurity concentration of the order of at most 10^{15} dopant atoms per cm^3, a shallow surface layer of the body portion having a higher doping level than that of the underlying semiconductor body portion, said higher doping level being at least 5×10^{17} atoms per cm^3, an electrode connection to the underlying body portion, and a metal electrode on the shallow surface layer and forming a Schottky barrier with the semiconductor body, the shallow surface layer determining the effective height of the barrier, the depth of the shallow surface layer being much smaller than the thickness of the depletion layer extending from the Schottky barrier in the zero bias condition, whereby the surface layer is substantially depleted of charge carriers and the slope of the reverse current-voltage characteristic is determined by the doping of the underlying semiconductor body portion substantially independently of said shallow surface layer.

3,943,553
THERMOELECTRIC ASSEMBLY AND THERMOELECTRIC COUPLES AND SUBCOUPLES THEREFOR

Sven T. Elfving, 1560 Sandburg Terrace, Apt. 501, Chicago, Ill. 60610, and Thore M. Elfving, 433 Fairfax Ave., San Mateo, Calif. 94402

Continuation of Ser. No. 370,047, June 14, 1973, abandoned.
This application Dec. 16, 1974, Ser. No. 533,258
Int. Cl.² H01L 23/56, 23/48; H01V 1/30, 1/00
U.S. Cl. 357—28 16 Claims

1. A thermoelectric assembly comprising semiconductor bodies of P-type and N-type semiconductor material each having hot and cold sides of predetermined area with similar sides adapted to be connected in series by junction bridges to form thermocouples, characterized in that a contact member of substantially the same size and shape is secured to and contacts substantially the entirety of each of the sides of said bodies of semiconductor material, said junction bridges each having substantially the form of a thin sheet metal element disposed edgewise with its surfaces at substantially right angles with respect to the associated side and contact member of the

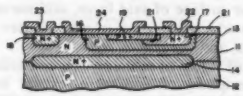


semiconductor body with one edge in conductive contact with the contact member of the associated surface of an associated semiconductor body and with the other edge adapted to be associated with heat exchange means to the surrounding media, and a non-conductive supporting structure directly engaging said metal elements to support and protect the thermoelectric assembly.

3,943,554
THRESHOLD SWITCHING INTEGRATED CIRCUIT AND METHOD FOR FORMING THE SAME

Lewis K. Russell, San Jose; Tich T. Dao, Cupertino, and Richard S. Muller, Kensington, all of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 384,102, July 30, 1973, abandoned.
This application Feb. 10, 1975, Ser. No. 548,825
Int. Cl.² H01L 29/72
U.S. Cl. 357—34 1 Claim



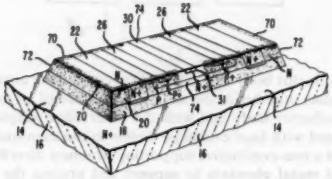
1. An integrated circuit comprising a silicon semiconductor body of first conductivity type and having a generally planar top surface, a base region of a second conductivity type formed in said semiconductor body and being defined by a first dishshaped PN junction extending to the surface, an emitter region of said first conductivity type formed in said base region and being defined by a second PN junction extending to the surface, a tunnel diode region of said second conductivity type formed in said base region extending to and

terminating at said surface and extending laterally with respect to said surface to overlap a portion of said second PN junction, said tunnel diode region having a high doping concentration relative to said base region together with metallization carried by said surface forming solely in combination with said surface a combination metallization contact partially overlying and making contact at said surface to said collector, said base and said tunnel diode regions and an additional contact to said emitter region to form a Schottky-clamped threshold switched integrated circuit.

3,943,555
SOS BIPOLAR TRANSISTOR

Charles William Mueller, Princeton, and Edward Curtis Douglas, Princeton Junction, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 2, 1974, Ser. No. 466,287
Int. Cl.² H01L *27/12, 29/72, 21/86, 21/265*
U.S. Cl. 357—49 **3 Claims**

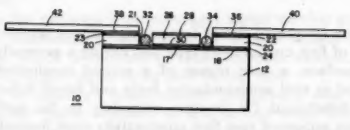


1. A bipolar transistor comprising:
an electrically insulating substrate,
a mesa comprising a layer of single-crystal semiconductor material of one type conductivity on a surface of said substrate, said layer having a planar surface and a thickness of between about 0.5 μm and about 5 μm,
a base region of an opposite type conductivity disposed in a portion of said layer, said layer comprising a collector region,
an emitter region of said one type conductivity disposed in a portion of said base region and defining with said base region an emitter-base junction,
each of said regions having a planar surface coplanar with said planar surface of said layer, said mesa having a periphery in which a portion of said emitter-base junction terminates, and
an edge-guard region of said one type conductivity disposed in said periphery of said mesa, except in said emitter region and said emitter-base junction.

3,943,556
METHOD OF MAKING A HIGH FREQUENCY SEMICONDUCTOR PACKAGE

Richard W. Wilson, Phoenix, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Continuation of Ser. No. 383,872, July 30, 1973, abandoned. This application Feb. 10, 1975, Ser. No. 548,327
Int. Cl.² H01L *23/02, 23/12*
U.S. Cl. 357—74 **4 Claims**

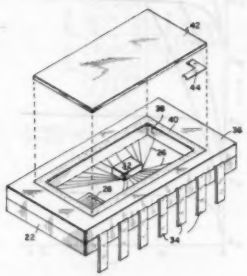


1. A semiconductor package comprising:
a metal header having a surface;
a metallization layer on said surface including titanium and nickel fused with solder;
a first apertured alumina insulator on said surface exposing said metallization on said surface;
a second non-apertured beryllia insulator on said surface within said aperture; and
a segment of copper wire plated with nickel and gold positioned in said aperture between said first insulator and said second insulator attached to said metal header by said metallization layer forming a bonding rail.

3,943,557
SEMICONDUCTOR PACKAGE WITH INTEGRAL HERMETICITY DETECTOR

Lawrence E. Frazee, Huntington, N.Y., and Anthony V. Fraioli, Essex Fells, N.J., assignors to Plessey Incorporated, Melville, N.Y.

Division of Ser. No. 443,436, Feb. 19, 1974, Pat. No. 3,890,703. This application Oct. 31, 1974, Ser. No. 519,605
Int. Cl.² H01L *23/16*
U.S. Cl. 357—75 **4 Claims**



1. A hermetically-sealable package for a semiconductive device including an integral hermeticity detector comprising:
means forming a cavity adapted to retain said semiconductive device and including a dielectric substrate;
a plurality of metallic leads extending from within said cavity to the outside of said package;
a humidity sensor within said cavity, said sensor comprising a double-fired layer of cobalt oxide, said layer having a lower than normal resistivity as a result of a second firing in a reducing atmosphere at about 1500°C. for a brief period;
a pair of electrodes on said double-fired layer connected to a pair of said leads; and
seal means for hermetically sealing said cavity.

3,943,558
APPARATUS FOR REPRODUCING COLORED STILL PICTURE IMAGE

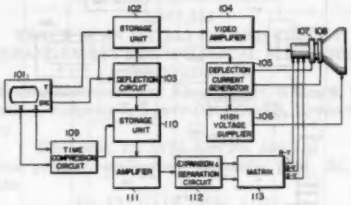
Yoshiteru Izura, Toyonaka, and Keisuke Okano, Katano, both of Japan, assignors to Matsushita Electric Industrial Company, Ltd., Osaka, Japan

Filed Sept. 10, 1973, Ser. No. 395,438
Claims priority, application Japan, Sept. 14, 1972, 47-92586
Int. Cl.² H04N *9/02, 9/40, 5/78*
U.S. Cl. 358—1 **3 Claims**

1. An apparatus for reproducing a colored still picture image comprising:
a first signal storage tube for recording the luminance signal,
a circuit for compressing two kinds of chrominance signals in the time axis respectively, and for converting the compressed signals into time-sequential signals by alternately taking out the compressed signals,

a second signal storage tube for recording the time-sequential signals,

a circuit for expanding the signal read out from said second signal storage tube in the time axis, and for separating the signal into two kinds of chrominance signals, and



means for reproducing a colored still picture from the two kinds of expanded and separated chrominance signals and from the signal read out from said first storage tube.

3,943,559
TELECINEMA SYSTEM USING ELECTROLUMINESCENT DIODES

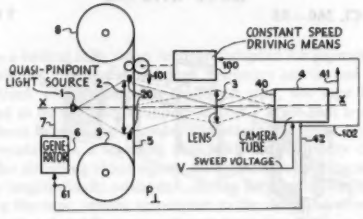
Luigi d'Auria; Guy Chevalier; Michel Favreau; Jean Pierre Huignard; Jean Pierre Lacotte, and Claude Puech, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 22, 1974, Ser. No. 463,121

Claims priority, application France, Apr. 20, 1973, 73.14634

Int. Cl.² H04N 5/84

U.S. Cl. 358—6 **4 Claims**



1. A telecinema system comprising:

photoelectric transducer means including at least one camera tube provided with a receiving surface;

lens means in line with said camera tube for projecting images of a cinematographic film onto said receiving surface, said tube being provided with sweep means for scanning the projected images in a recurrent raster of line and frame scans with successive sweep cycles separated by intervening retrace intervals;

a quasi-pinpoint light source including at least one electroluminescent diode positioned in line with said lens means for transluminating said film;

constant-speed drive means for said film synchronized with said sweep means; and

a generator of energizing pulses for said diode connected to said sweep means for triggering during said retrace intervals, said energizing pulses having a length not exceeding the duration of a line scan, said receiving surface having a luminous persistence lasting for at least a sweep cycle.

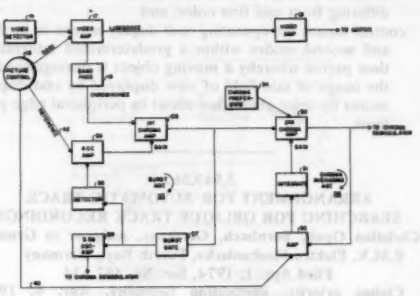
3,943,560
PICTURE LEVEL CONTROL WITH COMPATIBLE AUTOMATIC CHROMA CONTROL

Harry T. Freestone, Portsmouth, Va., assignor to General Electric Company, Portsmouth, Va.

Filed May 10, 1974, Ser. No. 468,991

Int. Cl.² H04N 9/535

U.S. Cl. 358—27 **7 Claims**



1. In a color television receiver having a luminance signal channel and a chrominance signal channel containing feedback control means to maintain the chrominance signal level constant, a picture control circuit comprising:

adjusting means for adjusting the level of said luminance and chrominance signals and generating a reference voltage proportional to the level change in the chrominance signal caused by said adjusting means,

said feedback control means being responsive to level changes in said chrominance signal to develop a correcting voltage to offset said level changes thereby maintaining the level of said chrominance signal constant,

and means applying said reference voltage to said feedback control means to nullify the correcting voltage developed by said feedback control means in response to the change in said chrominance signal level occasioned by said adjusting means, such that said chrominance signal level is maintained constant by said feedback control means except for level changes occasioned by said adjusting means.

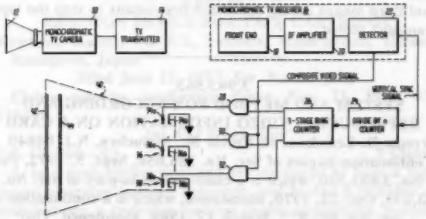
3,943,561
SYSTEM FOR OPTICALLY DETECTING MOVING TARGETS

Ralph W. Biddlecomb, Lutherville, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 6, 1973, Ser. No. 386,149

Int. Cl.² H04N 7/18

U.S. Cl. 358—81 **6 Claims**



1. A system for detecting movement of an object within a field of view, said system comprising:

a monochromatic TV camera for providing a composite video signal including all color components as sensed by

said monochromatic TV camera to form a plurality of frames indicative of said field of view,

said composite video signal being the same from said frame to frame in the absence of movement in said field of view,

display means for receiving the composite video signal and operative in a first mode for displaying a first frame to form an image of said field of view in a first color and operative in a second mode for displaying a second frame to form an image of said field of view in a second color differing from said first color; and

control means for operating said display means in its first and second modes within a predetermined integration time period whereby a moving object is distinguished in the image of said field of view displayed by said display means by color aberration about its peripheral edge portions.

3,943,562

ARRANGEMENT FOR AUTOMATIC TRACK SEARCHING FOR OBLIQUE TRACK RECORDINGS

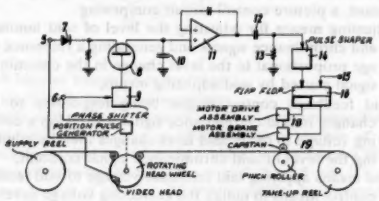
Christian Opelt, Bernbach, Germany, assignor to Grundig E.M.V. Elektro-Mechanische, Fuerth Bay., Germany

Filed Apr. 1, 1974, Ser. No. 457,134

Claims priority, application Germany, Apr. 4, 1973, 2316803

Int. Cl.² H04N *5/795*; G11B *15/52*, *27/22*

U.S. Cl. 360—10 **4 Claims**



1. Apparatus for automatic video track searching during the reproduction of still pictures from oblique magnetic video track recordings on a magnetic tape by at least one video head rotating with a magnetic-head drum capable of generating position pulses, video signal being recorded on said tape in the form of a frequency-modulated carrier wave and said magnetic tape being driven by a transport motor drive assembly and stopped by a transport motor brake assembly, said apparatus comprising first means to effect a slow speed and complete stopping of said transport motor assembly, second means to produce a voltage proportional to the playback voltage of said video head at the beginning of each track, and third means to produce a pulse each time said voltage is going through its minimum; said first means being arbitrarily activated to switch the tape transport motor to a slow speed, and said third means acting upon said first means to stop the tape transport motor.

3,943,563

SYSTEM AND METHOD FOR RECORDING AND REPRODUCING VIDEO INFORMATION ON A CARD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 286,056, Sept. 5, 1972, Pat. No. 3,803,350, which is a continuation-in-part of Ser. No. 83,239, Oct. 22, 1970, abandoned, which is a continuation of Ser. No. 807,877, March 17, 1969, abandoned. This application Apr. 8, 1974, Ser. No. 458,879

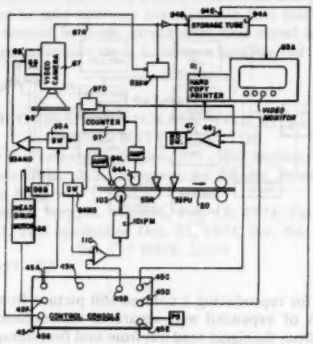
Int. Cl.² H04N *5/78*; G11B *25/04*

U.S. Cl. 360—35 **8 Claims**

6. A method of recording full frame video signals along a selected recording area of a record card comprising:

presenting a record card to a card recording means having a recording transducing means,

detecting the presence of said card at said card recording means and generating a control signal when said card is predeterminately aligned within said card recording means,



applying said control signal to control the operation of a means for generating a full frame video picture signal and causing said card recording means to be modulated by said full frame video picture signal and to effect a recording representative of said full frame video picture signal along a selected recording area of said card.

3,943,564

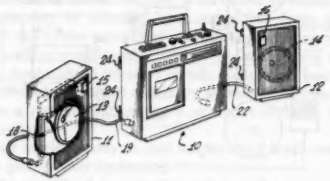
STEREOPHONIC RECORDING AND PLAYBACK APPARATUS

Joseph S. Tushinsky, Los Angeles, Calif., assignor to Superscope, Inc., Sun Valley, Calif.

Filed June 5, 1975, Ser. No. 476,621

Int. Cl.² G11B *5/02*

U.S. Cl. 360—55 **7 Claims**



1. Portable stereophonic recording and playback apparatus, comprising:

a plurality of microphones for transducing acoustical energy in a sound field into electrical signals in a like plurality of discrete channels;

electrical means connectable with said plurality of microphones and selectively operable in a record mode to record said electrical signals onto a recording medium, and subsequently in a playback mode to reproduce the electrical signals from the recording medium;

a housing for said electrical means;

a like plurality of speakers, connectable with said electrical means in the playback mode, for transducing said reproduced electrical signals into acoustical energy, thereby to reproduce the sound field;

a like plurality of independently movable speaker-microphone enclosures, each enclosing one of said speakers and one of said microphones, to provide equal stereophonic separation for both the record and playback modes; and

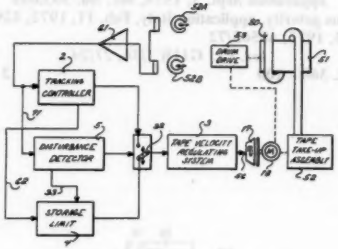
a plurality of connecting cables for connecting each of said speaker-microphone enclosures with said electrical means, whereby each of said speaker-microphone enclosures requires only one of said connecting cables to connect both its speaker and its microphone to said electrical means.

3,943,565

TRACK SCAN INITIATION AND CUTOUT ARRANGEMENT FOR A HELICAL SCAN VIDEO RECORDER

Egon Frank, Theisenort, and Klaus Steiger, Kronach, both of Germany, assignors to Loewe-Opta GmbH, Kronach, Germany

Filed Sept. 25, 1974, Ser. No. 509,136
Claims priority, application Germany, Sept. 26, 1973, 2348286
Int. Cl.² G11B 21/04, 21/10
U.S. Cl. 360—70 6 Claims



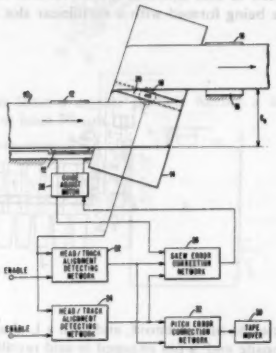
1. In a helical scan video recorder adapted for reproducing video signals modulated on a high frequency carrier and fixed on a track of an elongated magnetic tape, the tape being adapted to be helically wrapped around a drum that is rotatable about its axis, the recorder including a magnetic pick-up head rotatable in a scanning path with the periphery of the drum for detecting video signals modulated on the tape as the tape is longitudinally advanced, means for longitudinally advancing the tape, means responsive to the detected envelope of the video signal for generating an error signal whose mean amplitude is proportional to the instantaneous amplitude of deviation of the video track from the scanning path of the magnetic head, and tape velocity regulation means connectible to the output of the error signal generating means and cooperable with the tape advancing means for varying the advance of the tape in accordance with variations of the error signal to correspondingly vary the amplitude envelope of the video signal detected by the head, the improvement which comprises, in combination, storage means coupled to the error signal generating means for continually storing the last-occurring mean amplitude of the error signal, first switching means effective when in a normal first position to couple the output of the storage means to the input of the tape velocity regulation means, said first switching means being operable from the first position to a second position to couple the output of the error signal generating means to the input of the tape velocity regulation means, and means responsive to the detected envelope of the video signal and rendered effective when the amplitude of such detected envelope exceeds a predetermined level for operating the first switching means from the first position to the second position.

3,943,566

DYNAMIC SKEW CORRECTION FOR ROTATING HEAD MAGNETIC RECORDER

George W. Brock, Boulder; Ernest P. Kollar, Longmont, and Michael L. Nettles, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 17, 1974, Ser. No. 489,194
Int. Cl.² G11B 15/26, 15/60, 5/48
U.S. Cl. 360—71 19 Claims



1. Apparatus for dynamically correcting lack of parallelism between oblique tracks on tape and path of rotating head in a rotating-head magnetic recording device where the unguided length of tape about the head relative to the width of the tape is a ratio less than 10 to 1, said apparatus comprising:

tape entry and tape exit guides for edge guiding the tape as the tape respectively enters and leaves the region of the head path whereby the guide spacing between the reference edge of the entry guide and the reference edge of the exit guide defines the angle of the tracks on the tape;

at least one of said tape entry or tape exit guides being laterally adjustable to change the guide spacing while both guides are mounted at a fixed angle relative to the axis of the head path;

means for detecting lack of parallelism between the head path and the tracks on the tape;

means connected to said detecting means for generating a skew error correction signal indicative of the angular difference between the tracks on tape and the head path;

means connected to said generating means for dynamically adjusting the guide spacing of said guiding means in accordance with the skew error correction signal so that the angular difference between the tracks on tape and the head path is reduced substantially to zero.

3,943,567

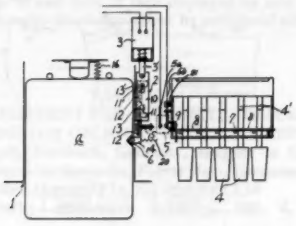
EJECTION DEVICE FOR TAPE CARTRIDGE

Kawasaki Kazuo, No. 8-3, 2-chome, Malarimatsu, Hatano, Kanagawa, Japan

Filed June 12, 1973, Ser. No. 369,205
Claims priority, application Japan, Nov. 21, 1972, 47-116240
Int. Cl.² G11B 5/00
U.S. Cl. 360—93 3 Claims

1. In a push-button operated set, arranged to have a tape record cartridge inserted thereinto, and having a plurality of push-buttons, a cartridge ejecting device comprising, in combination, latch means operable to engage an inserted tape cartridge to retain the cartridge in operative relation; a solenoid operatively associated with said latch means and operable, when energized, to disengage said latch means from the cartridge; means operable, responsive to such disengagement

of said latch means, to effect at least partial ejection of the cartridge; an energizing circuit for said solenoid including, in series, a normally open switch; and means operable, responsive to operation of a push-button, to close said switch to energize said solenoid; said latch means comprising a holding plate; a roller mounted at an end of said holding plate and engageable in a recess in a cartridge; a supporting plate; means biasing said holding plate into engagement with said supporting plate; a sliding plate adjacent said holding plate and connected to said solenoid for movement thereby; said sliding plate being formed with a rectilinear slot adjacent its



end connected to said solenoid, and with a L-shape slot adjacent its opposite end; a pin engaged in said rectilinar slot and forming a pivot for said supporting plate; a projection on said supporting plate engaged in said L-shaped slot; said pin and said projection normally engaging those ends of their respective slots nearer to said solenoid and, upon movement of said sliding plate toward said solenoid responsive to energization of said solenoid, engaging the opposite ends of their respective slots whereby said projection is at the junction of the two legs of said L-shape slot so that said supporting plate and said holding plate may pivot about said pin for release of said roller from the recess in the cartridge.

3,943,568

MAGNETIC HEAD HEIGHT CHANGING DEVICE

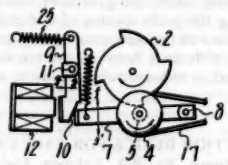
Tatsuro Suzuki, Nagoya, Japan, assignor to Yupiteru Ongaku Kogyo Kabushikikaisha, Tokyo, Japan

Filed Apr. 8, 1974, Ser. No. 458,872

Claims priority, application Japan, May 4, 1973, 48-52934[U]

Int. Cl.² G11B 21/08

U.S. Cl. 360—106 **3 Claims**



1. Apparatus for adjusting the position of a magnetic head comprising,

a driving means,

a first pivoted plate,

a driving pulley mounted on said first pivoted plate away from the pivot point and driven by said driving means,

a rotatably supported disc formed with a plurality of projections formed on its outer periphery having one abrupt edge and one gradually increasing edge and said driving pulley engageable therewith such that said driving pulley engages and drives said disc on said gradually increasing edge and falls into a non-driving position after passing said abrupt edge, said disc having a face cam formed on one of its side faces,

a cam follower engageable with said face cam and said magnetic head to control its position,

a second pivoted locking plate engageable with the first pivoted plate to lock it in a position such that said driving pulley is out of engagement with said disc,

a solenoid mounted adjacent said second pivoted locking plate to move it to a position such that it frees said first pivoted plate,

a first spring means connected to said first pivoted plate to bias it toward said disc, and

a second spring connected to said second pivoted plate to bias it to the locking position.

3,943,569

CASSETTE TAPE TRANSPORT WITH ADJUSTABLE HEAD

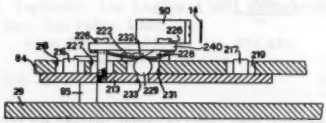
Giuseppe Bettini, Ivrea (Turin), and Carlo Romano, Montalto Dora (Turin), both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Division of Ser. No. 331,926, Feb. 12, 1973, abandoned. This application Sept. 3, 1974, Ser. No. 503,005

Claims priority, application Italy, Feb. 11, 1972, 52901/72; May 13, 1972, 68505/72

Int. Cl.² G11B 5/56, 21/24

U.S. Cl. 360—109 **3 Claims**



2. In a cassette tape transport receptive of a tape cassette and of the type having a read/record head, an actuating plate carrying said head and having an aperture therein and means mounting said actuating plate for movement into and out of an operating position wherein said head is brought into engagement with a run of tape in the cassette, means mounting said head on said actuating plate for universal adjustment with respect to the run of tape comprising;

a mounting plate on which said head is fixedly mounted;

a positioning plate connected to said actuating plate, wherein the actuating plate is disposed between the mounting plate and the positioning plate;

means connecting said mounting plate to said positioning plate to permit movement of said mounting plate perpendicular to the plane of said actuating plate and comprising three peripherally spaced screws;

a leaf spring disposed between the actuating plate and the mounting plate for biasing the mounting plate away from said actuating plate and comprising a central portion and three arms, each arm contacting the mounting plate adjacent to one of the screws; and

a locating member disposed in the aperture of the actuating plate and connecting the central portion of the leaf spring with said positioning plate and permitting said movement of the mounting plate with respect to the actuating plate.

3,943,570

SEMICONDUCTOR MAGNETIC HEAD

Naoki Yamamoto; Kikuji Sato, both of Kokubunji, and Tetsu Oi, Tokyo, all of Japan, assignors to Hitachi, Ltd., Japan

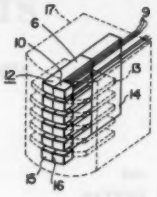
Filed Sept. 13, 1974, Ser. No. 505,972

Claims priority, application Japan, Sept. 28, 1973, 48-108397; Mar. 1, 1974, 49-23312; May 20, 1974, 49-55425

Int. Cl.[2] G11B *5/38;* G01R *33/02*

U.S. Cl. 360—112 17 Claims

1. In a semiconductor magnetic head comprising a first substrate of a magnetic material having a high permeability, a magneto-sensitive element composed of a semiconductor film provided on said first substrate through a first insulation film interposed therebetween, lead wires connected to said magneto-sensitive element and a second substrate of a magnetic material having a high permeability formed so as to cover said magneto-sensitive element through a second interposed insulation film, the improvement residing in that said magneto-sensitive element is composed of a polycristalline thin film containing at least a crystal particle having a longitudinal diameter of at least 30 μm.



DESIGN PATENTS

GRANTED MARCH 9, 1976

ERRATA

For CLASS	See PATENT NO.
006–007	239,088
006–248	239,089

DESIGN PATENTS

(GRANTED MARCH 9, 1976)

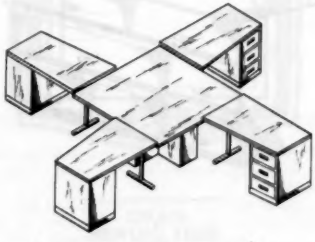
ERRATA

Pat.	Has
D234,000	PATENT TO
D236,007	2,19,089
D236,248	2,19,089

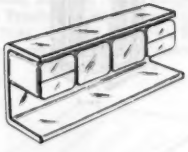
DESIGNS

MARCH 9, 1976

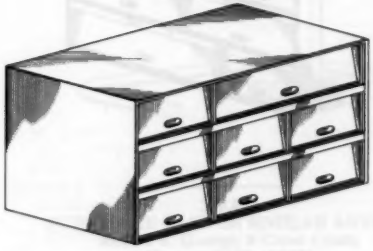
239,061
PLURAL DESK UNIT
Ronald D'Elia, 153 Woodcrest Ave., White Plains, N.Y. 10604
Filed Jan. 4, 1974, Ser. No. 430,729
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—157



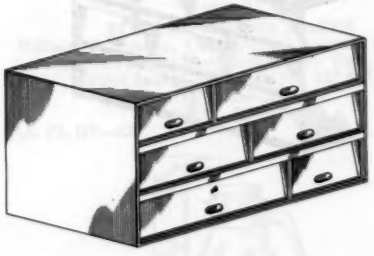
239,062
CREDENZA
William B. Sklaroff, Narberth, Pa., assignor to Tiffany Industries, Inc., St. Louis, Mo.
Filed Mar. 20, 1974, Ser. No. 452,811
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—166



239,063
STORAGE UNIT
John E. Sgombick, Ramsey, N.J., assignor to Xerox Corporation, Stamford, Conn.
Filed May 31, 1974, Ser. No. 475,009
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—166

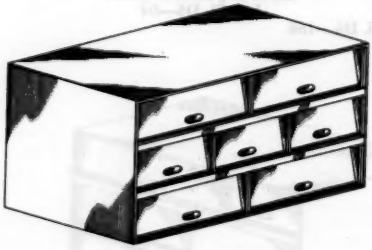


239,064
STORAGE UNIT
John E. Sgombick, Ramsey, N.J., assignor to Xerox Corporation, Stamford, Conn.
Filed May 31, 1974, Ser. No. 475,066
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—166

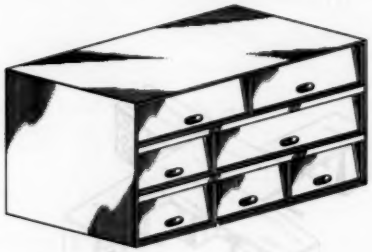


239,065
STORAGE UNIT
John E. Sgombick, Ramsey, N.J., assignor to Xerox Corporation, Stamford, Conn.
Filed May 31, 1974, Ser. No. 475,068
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—166

239,066
STORAGE UNIT
John E. Sgombick, Ramsey, N.J., assignor to Xerox Corporation, Stamford, Conn.
Filed May 31, 1974, Ser. No. 475,069
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—166

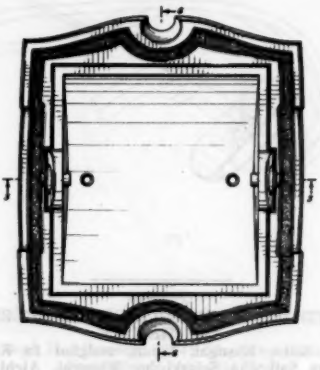


239,067
STORAGE UNIT
John E. Sgombick, Ramsey, N.J., assignor to Xerox Corporation, Stamford, Conn.
Filed May 31, 1974, Ser. No. 475,070
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—166



239,068
HOOK
George D. Read, Glendora, Lawrence Glen McCain, Beverly Hills, and Edward William Scott, Culver City, Calif., assignors to Ajax Hardware Corporation, City of Industry, Calif.
Filed Oct. 15, 1974, Ser. No. 514,292
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—102

239,069
RECESSED TOILET TISSUE HOLDER
George D. Read, Glendora, Lawrence Glen McCain, Beverly Hills, and Edward William Scott, Culver City, Calif., assignors to Ajax Hardware Corporation, City of Industry, Calif.
Filed Oct. 15, 1974, Ser. No. 514,579
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—97

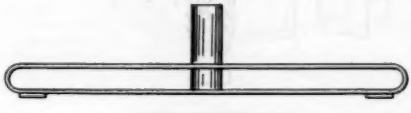


239,070
SEWING TREE
Irma L. Gray, 1019 Elkgrove Ave., Apt. 1, Venice, Calif. 90291
Filed Oct. 22, 1974, Ser. No. 516,980
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—28

239,071
COMBINATION CABINET AND STAND
Arthur Robson, Jericho, N.Y., assignor to Morse Electro Products Corp., Brooklyn, N.Y.
Filed Nov. 4, 1974, Ser. No. 520,375
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—27

239,072
SUPPORT STAND FOR A BLANKET
John F. Adams, 55 Lee Road, Chestnut Hill, Mass. 02167
Filed Dec. 4, 1974, Ser. No. 529,683
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—85

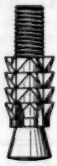
239,073
FURNITURE BASE OR SIMILAR ARTICLE
Robert F. George, 8 Carol Court, Crugers, N.Y. 10521
Original design application June 29, 1973, Ser. No. 375,058. Divided and this application Feb. 3, 1975, Ser. No. 546,405
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—196



239,074
ELECTRIC COFFEE MAKER
William J. Rakocy, Clifton, N.J., assignor to North American Philips Corporation, New York, N.Y.
Filed Jan. 10, 1974, Ser. No. 432,305
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—62

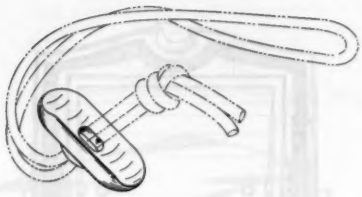
239,075
MICROWAVE OVEN
David F. Graff, New Iberia, La., and Richard H. Burns, and William J. Walthour, Troy, Ohio, assignors to Hobart Corporation, Troy, Ohio
Filed Feb. 14, 1975, Ser. No. 549,891
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128

239,076
DRIVE-IN BOLT
Kazuo Murakoshi, Tokyo, Japan, assignor to Kabushiki Kaisha Murakoshi Seira Seisakusho, Tokyo, Japan
Filed July 24, 1973, Ser. No. 382,072
Claims priority, application Japan Feb. 12, 1973
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—272



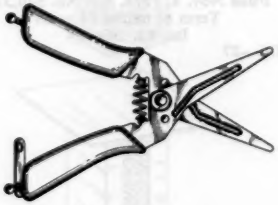
239,077
SOLDERING IRON
Harold S. Foster, Huntington Beach, and Charles J. Ortega, Valencia, Calif., assignors to Eldon Industries, Inc., Hawthorne, Calif.
Filed Sept. 4, 1973, Ser. No. 393,926
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30

239,078
STATIONARY ROPE LOCK
Charles E. Hurney, Spirit Lake Iowa, assignor to Berkley & Company, Inc., Spirit Lake, Iowa
Filed Feb. 8, 1974, Ser. No. 440,837
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—108



239,079
COMBINATION LOCK FOR BICYCLES OR THE LIKE
Hisashi Saito, Kasugai, Japan, assignor to Kabushiki Kaisha Saikosha Seisakusho, Kasugai, Aichi Prefecture, Japan
Filed Apr. 24, 1974, Ser. No. 463,840
Claims priority, application Japan Dec. 12, 1973
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—114

239,080
GENERAL PURPOSE SHEARS
Richard L. Stevenson, Los Angeles, Calif., assignor to Pacific Metals Products Company, Sun Valley, Calif.
Filed May 8, 1974, Ser. No. 468,066
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—5



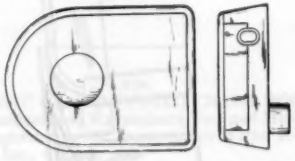
239,081
SPANNER WRENCH
Harry J. Cronin, 7 Mount Vernon Road E., Weymouth, Mass. 02189
Filed July 18, 1974, Ser. No. 489,707
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—27

239,082
MOBILE HOME TIE-DOWN TENSIONING BRACKET
Joseph H. Manning, 57045 Mayflower Road, South Bend, Ind. 46619
Filed July 22, 1974, Ser. No. 490,583
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—229

239,083
LOCK
Leroy Mills, P.O. Box 51, Newhalem, Wash. 98283
Filed Aug. 27, 1974, Ser. No. 500,884
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—108

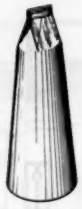
239,084
SLEEVE FOR A MASONRY ANCHOR
Frederick J. Harris, Clinton, Conn., assignor to Olin Corporation, New Haven, Conn.
Filed Sept. 11, 1974, Ser. No. 504,947
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—272

239,085
CABLE CAPSTAN CASING
Fred Einar Ahlbin, Fairfield, and William George Hembling, Milford, Conn., assignors to The Scott & Fetzer Company, Lakewood, Ohio
Filed Oct. 4, 1974, Ser. No. 512,199
Term of patent 14 years
Int. Cl. D22—*05*; D8—*99*
U.S. Cl. D8—216



239,086
FLEXIBLE HIGH-SHOULDER RETAINING RING
Omar Piatti, New York, and Wally Berliner, Floral Park, N.Y., assignors to Waldes Kohinook, Inc., Long Island City, N.Y.
Filed Oct. 8, 1974, Ser. No. 513,061
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—266

239,087
GABLE TOP PACKAGING CONTAINER OR THE LIKE
Ernest L. Smith, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Apr. 24, 1974, Ser. No. 463,546
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—180



239,088
JUVENILE CAR SEAT
Joseph C. Hafner, 1321 Rudy Drive, Troy, Ohio 45373, and Raymond J. Callebaut, 30 Dawson Drive, Needham, Mass. 02192
Filed Oct. 25, 1974, Ser. No. 518,165
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—7

239,089
DISPLAY HANGER
Joseph M. Gindi, 4 Morgan Ave., Deal, N.J. 07723
Filed Aug. 26, 1974, Ser. No. 500,715
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—248

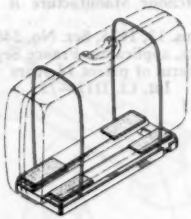
239,090
CLOCK
Ronald G. Casteel, Ottawa, Ohio, assignor to GTE Sylvania Incorporated, Stamford, Conn.
Filed Feb. 18, 1975, Ser. No. 550,515
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—6

239,091
DIGITAL CLOCK
Seiji Toyoshima, 22—22, Nagaike-cho, Abeno-ku, Osaka, Japan
Filed June 7, 1973, Ser. No. 367,783
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15

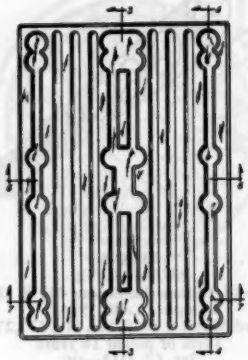
239,092
CASING FOR A WALL CLOCK, WALL PLAQUE OR SIMILAR ARTICLE
Raymond Dybala, Chicago, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Dec. 6, 1974, Ser. No. 530,253
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—17

239,093
CALIBRATED RULER
Albert Balla, Fort Lauderdale, Fla.
(2078 Integrity Drive N., Columbus, Ohio 43209)
Filed Oct. 11, 1973, Ser. No. 405,322
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—71

239,094
WHEELED LUGGAGE CARRIER
Donald D. Duffy, 611-C Ocean Ave., Seal Beach, Calif. 90740
Filed Jan. 23, 1975, Ser. No. 543,228
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—31

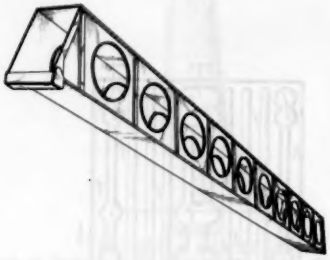


239,095
LID FOR LOAD ON INDUSTRIAL PLATFORM PALLET OR THE LIKE
Ray P. Hattenbach, Borger, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed June 10, 1974, Ser. No. 477,855
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D12—53

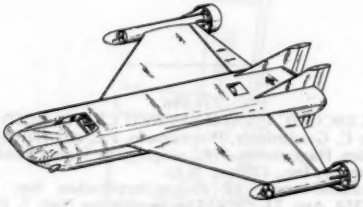


239,096
TELESCOPIC CANTILEVERED CRANE BOOM
Eugene C. Gardenhour, Waynesboro, Pa., and Herbert S. Robins, Hagerstown, Md., assignors to Walter Kidde & Company, Inc., Clifton, N.J.
Continuation-in-part of design application Ser. No. 463,354, Apr. 23, 1974. This application Nov. 7, 1974, Ser. No. 521,780
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—54

239,097
TELESCOPIC CRANE BOOM SECTION
Eugene C. Gardenhour, Waynesboro, Pa., and Herbert S. Robins, Hagerstown, Md., assignors to Walter Kidde & Company, Inc., Clifton, N.J.
Continuation-in-part of design application Ser. No. 463,352, Apr. 23, 1974. This application Nov. 7, 1974, Ser. No. 521,781
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—60



239,098
SUBMARINE
Richard Thomas Robinson, 400 E. Oak, Lompoc, Calif. 93436
Filed May 14, 1975, Ser. No. 577,275
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—65

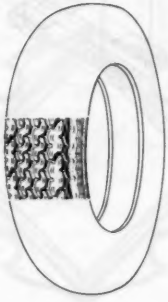


239,099
BALLOON
Bernard Sayers, Sharp Lane, Newport, N.J. 08345
Filed Dec. 31, 1974, Ser. No. 537,733
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—71

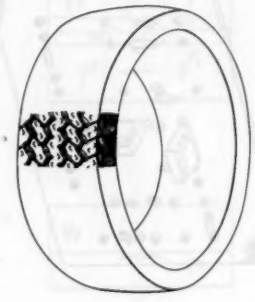
239,100
UNIT FRAME FOR DEMOUNTABLE LOAD-BODIES
Thomas W. Blasingame, P.O. Box 153, Boise, Idaho 83702
Filed Aug. 8, 1974, Ser. No. 488,102
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—96

239,101
MOTOR HOME OR THE LIKE
Sheldon Baer, 2970 Dona Emilia Drive, Studio City, Calif. 91604
Filed June 6, 1974, Ser. No. 477,054
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—100

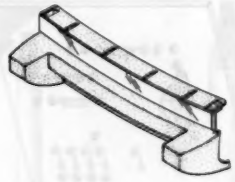
239,102
TIRE
Roland Martinet, Colombes, France, assignor to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes
Filed Jan. 13, 1975, Ser. No. 540,342
Claims priority, application France Sept. 26, 1974
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—143



239,103
PNEUMATIC TIRE TREAD AND BUTTRESS
Gerassimos C. Candiliotis, Agawam, Mass., assignor to Uniroyal, Inc.
Filed Jan. 2, 1975, Ser. No. 542,320
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147



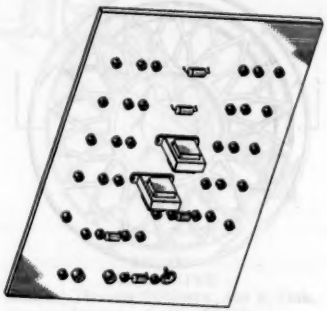
239,104
VEHICLE BUMPER PANEL
Alan J. Mittelman, 5160 Venice Blvd., Los Angeles, Calif. 90019
Filed Mar. 17, 1975, Ser. No. 558,884
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—169



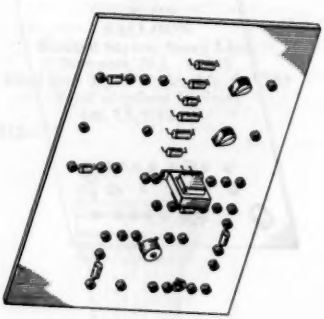
239,105
VEHICLE WHEEL
John Siroonian, Fresno, Calif., assignor to Western U.S. Industries, Fresno, Calif.
Filed Sept. 13, 1974, Ser. No. 505,653
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—205

239,106
SEMICONDUCTOR EDUCATIONAL BOARD
Douglas C. Covert, Royal Oak, Mich., assignor to Xerox Corporation, Stamford, Conn.
Filed May 15, 1974, Ser. No. 469,989
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—62

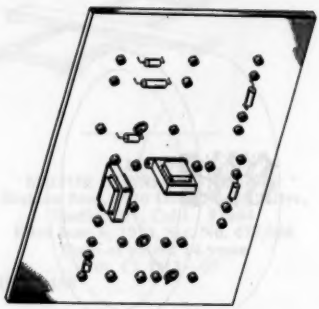
239,107
PARALLEL RL/RC CIRCUITS EDUCATIONAL BOARD
Douglas C. Covert, Royal Oak, Mich., assignor to Xerox Corporation, Stamford, Conn.
Filed May 30, 1974, Ser. No. 474,482
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—62



239,108
RLC CIRCUITS EDUCATIONAL BOARD
Douglas C. Covert, Royal Oak, Mich., assignor to Xerox Corporation, Stamford, Conn.
Filed May 30, 1974, Ser. No. 474,493
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—62

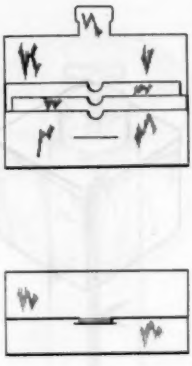


239,109
SERIES RL/RC CIRCUITS EDUCATIONAL BOARD
Douglas C. Covert, Royal Oak, Mich., assignor to Xerox Corporation, Stamford, Conn.
Filed May 30, 1974, Ser. No. 474,499
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—62

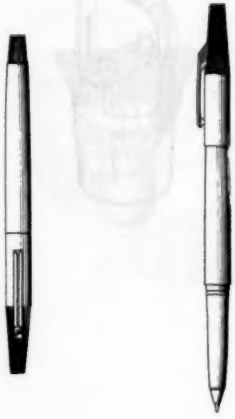


239,110
RECTIFIER/FILTER EDUCATIONAL BOARD
Douglas C. Covert, Royal Oak, Mich., assignor to Xerox Corporation, Stamford, Conn.
Filed May 30, 1974, Ser. No. 474,500
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—62

239,111
ENVELOPE
Robert Caprile, and Marilyn Caprile, both of 197 N. Morton, Hoffman Estates, Ill. 60172
Filed Sept. 16, 1974, Ser. No. 506,216
Term of patent 14 years
Int. Cl. D19—*01*
U.S. Cl. D19—3

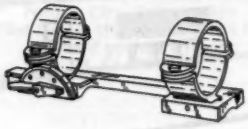


239,112
MARKING INSTRUMENT
William E. Marynissen, Old Greenwich, Conn., assignor to Bic Pen Corporation, Milford, Conn.
Filed Sept. 26, 1974, Ser. No. 509,713
Term of patent 14 years
The term of this patent subsequent to Dec. 16, 1989, has been disclaimed
Int. Cl. D19—*06*
U.S. Cl. D19—45



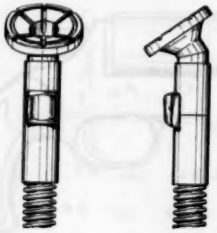
239,113
FLARE GUN
David Findlay, Guilford, Conn., assignor to Bellmore-Johnson Tool Co., Hamden, Conn.
Filed Feb. 20, 1975, Ser. No. 551,331
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—1

239,114
RANGE INDEXING TELESCOPIC SIGHT MOUNT
Gerald J. Kraai, 1500 N. 78th Place, Apt. 6, Kansas City, Kans. 66112
Filed June 20, 1974, Ser. No. 481,038
Term of patent 3½ years
Int. Cl. D22—*99*
U.S. Cl. D22—8

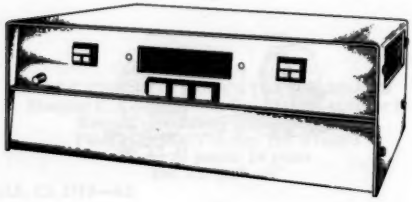


239,115
HAND HELD SHOWER SPRAY HEAD
Samuel L. McNair, Overland Park, Kans., and Henry J. Talge, Overland Park, Kans. (% Dazey Products Company, 4500 E. 75th St. Terrace, Kansas City, Kans. 64132); said McNair assignor to said Talge
Filed Feb. 26, 1975, Ser. No. 553,180
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35

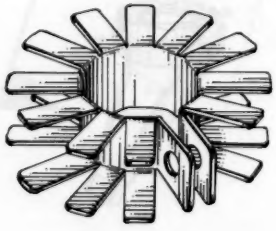
239,116
DENTAL ORAL SUCTION DEVICE
W. Grant Johnson, 717 E. Chapman, Orange, Calif. 92667
Filed Apr. 14, 1975, Ser. No. 567,780
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—1 D



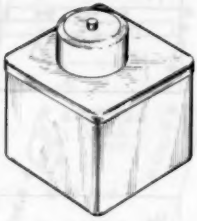
239,117
LORAN RECEIVER
David B. Tidus, Woodland Hills, Calif., assignor to Teledyne, Inc., Los Angeles, Calif.
Filed Jan. 10, 1974, Ser. No. 432,294
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 K



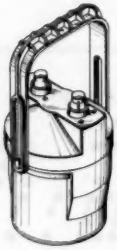
239,118
HEAT DISSIPATOR
Robert L. Branson, 1224 E. Christy Drive, Phoenix, Ariz. 85020
Filed Nov. 20, 1974, Ser. No. 525,352
Term of patent 14 years
Int. Cl. D13—*99*
U.S. Cl. D26—1 R



239,119
HOUSING FOR REMOTE ENGINE STARTER
Jack C. Dorsey, 8 Malvery Road, Norristown, Pa. 19403
Filed July 19, 1974, Ser. No. 489,904
Term of patent 3½ years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R



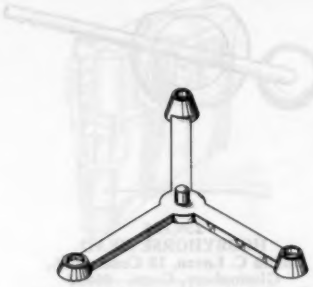
239,120
CONTAINER FOR RADIOISOTOPE GENERATOR
Robert E. Heyer, Hopatcong, and Bernard J. Bolter, Trenton, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.
Filed Apr. 17, 1974, Ser. No. 461,681
Term of patent 14 years
Int. Cl. D9—*03;* D24—*02*
U.S. Cl. D32—1 A



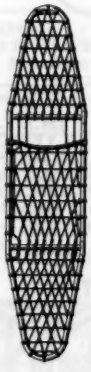
239,121
TENNIS BALL RETRIEVER
Dainy Travaglio, Kensington, Calif., assignor to Madewell Products, Inc., Oakland, Calif.
Filed Oct. 23, 1974, Ser. No. 517,086
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 CB

239,122
SHUTTLECOCK
Frank William Popplewell, Saffron Waldon, England, assignor to Dunlop Limited
Filed Aug. 12, 1974, Ser. No. 496,838
Claims priority, application Great Britain Feb. 16, 1974
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 SH

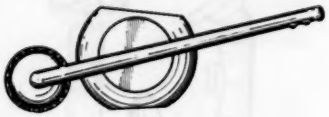
239,123
THREE LEGGED MULTI-HEIGHT GOLF BALL TEE
Robert L. Reed, 6039 E. 57th Place, Tulsa, Okla. 74135, and Cyril L. Spencer, 7910 W. County Club Drive, Apt. 4, Overland Park, Kans. 66212
Filed Nov. 18, 1974, Ser. No. 524,857
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GT



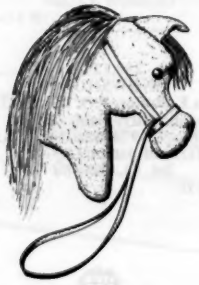
239,124
SNOWSHOE
John E. Butler, P.O. Box 1007, Nevada City, Calif. 95959
Filed Dec. 9, 1974, Ser. No. 530,534
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D34—14 D



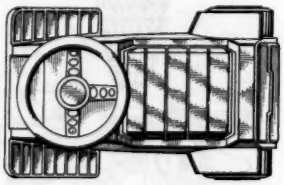
239,125
TOY WHEELBARROW
Marcel Vota, Lavans-les-St.-Claude, Jura, France
Filed Sept. 4, 1973, Ser. No. 394,101
Claims priority, application France May 21, 1973
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



239,126
HOBBYHORSE HEAD
Judith C. Loven, 18 Concord St.,
Glastonbury, Conn. 06033
Filed July 24, 1974, Ser. No. 491,324
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AE

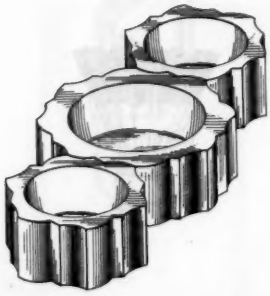


239,127
TOY VEHICLE
James R. Powers, Los Angeles, Calif., assignor to
Tomy Corporation, Long Beach, Calif.
Filed Aug. 14, 1974, Ser. No. 497,255
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ

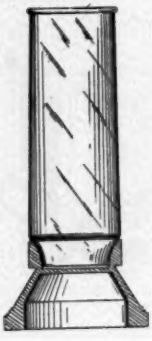


239,128
PLANT BALLING DEVICE
Robert S. Malkin, 257 Park Ave. S.,
New York, N.Y. 10010
Filed May 16, 1974, Ser. No. 470,627
Term of patent 14 years
Int. Cl. D15—*03*; D15—*99*
U.S. Cl. D35—1

239,129
PLANTER
Hugo Rosenberger, Alzenauer Strasse 29a–33,
8756 Kahl, Germany
Filed Sept. 30, 1974, Ser. No. 510,774
Claims priority, application Germany Apr. 1, 1974
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 R

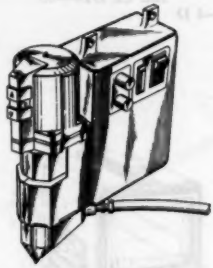


239,130
CANDLE GLASS
Peter N. Reed, San Antonio, Tex., assignor to Reed Candle Company, San Antonio, Tex.
Filed Feb. 2, 1972, Ser. No. 223,056
Term of patent 14 years
Int. Cl. D26—*01*; D26—*05*
U.S. Cl. D48—2

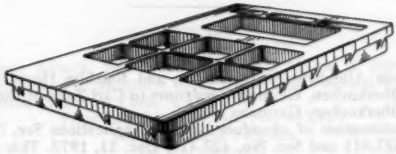


239,131
FLEXIBLE INSTRUMENT HOLDER AND POSITIONER
David T. Adler, 53 Diamond Drive, Plainview, N.Y. 11803
Filed Dec. 11, 1972, Ser. No. 313,663
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D54—13 A

239,132
ADHESIVE DISPENSING UNIT
Gerald W. Crum, Elyria, Robert A. Liss, Wellington, Alan B. Reighard, Bay Village, and Simon Z. Tamny, Lorain, Ohio, assignors to Nordson Corporation, Amherst, Ohio
Filed Feb. 5, 1974, Ser. No. 439,821
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 R

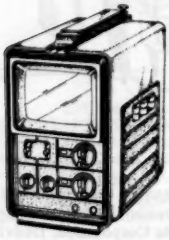


239,133
TRANSFORMER PAD OR THE LIKE
Charles William Dunmire, Fresno, Calif., assignor to Johns-Manville Corporation, Denver, Colo.
Continuation-in-part of abandoned design application Ser. No. 412,511, Nov. 2, 1973. This application Feb. 18, 1975, Ser. No. 550,882
U.S. Cl. D55—1 R
Term of patent 14 years
Int. Cl. D13—*02*

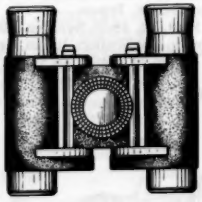


239,134
RADIO RECEIVER
Ken Kawamura, Katano, Katsuhiko Makino and Shinzo Murakami, Neyagawa, and Hironosuke Koda, Kyoto, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Sept. 23, 1974, Ser. No. 508,468
Claims priority, application Japan Apr. 30, 1974
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B

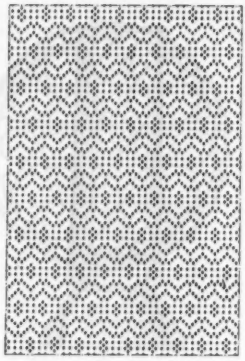
239,135
TELEVISION RECEIVER
Osamu Sugihara, Takatsuki, Kazuhiro Ueda, Mishimagun, Osaka, Fumiharu Ohta, Makoto Terauchi, Takayo Sugiwaka, and Mitsuo Yoshioka, Ibaraki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Oct. 10, 1974, Ser. No. 514,031
Claims priority, application Japan Apr. 15, 1974
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 D



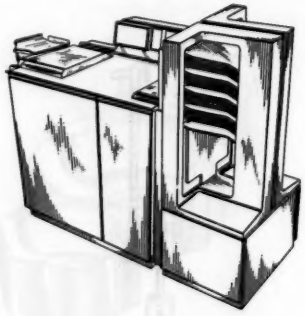
239,136
BINOCULARS
Erwin Altenheiner, Hasselborn, and Joachim Hornschu, Oberkochen, Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Germany
Continuation of abandoned design applications Ser. No. 427,411 and Ser. No. 427,416, Dec. 21, 1973. This application July 9, 1974, Ser. No. 486,881.
Claims priority, application Germany June 25, 1973
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 E



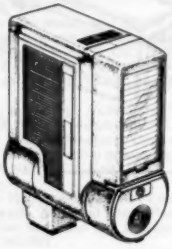
239,137
PAPER TOWELING
Donald T. Appleman, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed June 19, 1974, Ser. No. 480,641
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D59—2 A



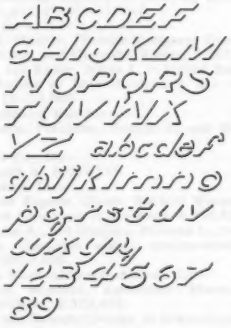
239,138
XEROGRAPHIC COPIER
Donald A. Robertson, Fairport, and Craig A. Smith, Pittsford, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Aug. 8, 1974, Ser. No. 495,606
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q



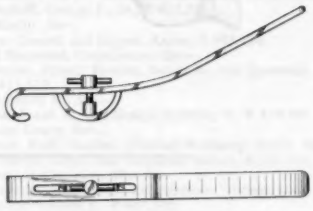
239,139
FLASH UNIT
Masahiro Karaki, Osaka, Japan, assignor to Matsushita Electrical Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Dec. 31, 1974, Ser. No. 537,859
Claims priority, application Japan Aug. 20, 1974
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 F



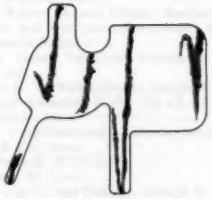
239,140
METAL FORMING PRESS
Dugmore Dennis Slattery, 117 Kestell St., Potgietersrus, Transvaal, Republic of South Africa, and Dennis Hilliar Chaddock, Loughborough, England; said Chaddock assignor to said Slattery
Filed July 31, 1974, Ser. No. 493,378
Claims priority, application Republic of South Africa Feb. 14, 1974
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D63—1



239,141
CARDIAC AND THORACIC SURGERY INSTRUMENT
Walter C. Ashcraft, Sacramento, Calif. (933 Main St., Lander, Wyo. 82520)
Filed Mar. 1, 1974, Ser. No. 447,311
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 R

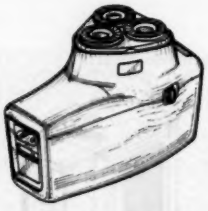


239,142
ORTHOPEDIC BRACE
Elmer Arluck, New York, N.Y., and Myron S. Jenner, Bethel, Vt., assignors to Thermo-Mold Medical Products, Inc., New York, N.Y.
Filed July 30, 1974, Ser. No. 493,127
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 J



239,143
ORTHOPEDIC ARM SUPPORT
Elmer Arluck, New York, N.Y., and Myron S. Jenner, Bethel, Vt., assignors to Thermo-Mold Medical Products, Inc., New York, N.Y.
Filed July 30, 1974, Ser. No. 493,128
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 J

239,144
DRY SHAVER OR SIMILAR ARTICLE
Maarten Willem Van Lelyveld, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 16, 1973, Ser. No. 406,909
Claims priority, application Switzerland, Apr. 16, 1973
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A



INDEX OF APPLICANTS AND ASSIGNEES

OF

PATENT APPLICATIONS PUBLISHED ON THE 9TH DAY OF MARCH, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Albers, Kenneth G.: *See—*
Cox, Robert N.; and Albers, Kenneth G., B 510,281.

American Can Company: *See—*
Nixon, Wayne Robert; Hitchler, Edward Willard; and Kubacki, Edward Frank, B 223,678.

American Home Products Corporation: *See—*
Sarantakis, Dimitrios, B 520,514.

Anderson, Arthur William; and Stamatoff, Gelu Stoeff, to Du Pont de Nemours, E. I., and Company. Hydrocarbon interpolymer compositions. B 632,416, Cl. 260-88.20F.

Anderson, Thomas P. Film record card. B 456,153, Cl. 40-159.000.

Apparatebau Rothemuhle Brandt & Kritzler: *See—*
Puritz, Ernst; and Kraft, Erich, B 328,116.

Arai, Michio, to Sony Corporation. Field effect transistor with a carrier injecting region. B 480,749, Cl. 357-22.000.

Ardac, Inc.: *See—*
Novak, Frank A.; and Dolejs, Anthony H., B 435,481.

Aronstein, Jesse; Leoff, Arkady; Murphy, John J.; and Ruder, Winfield S., to International Business Machines Corporation. Apparatus for transferring articles through various processing sectors of a manufacturing system. B 476,967, Cl. 318-593.000.

Bandelin, Fred J.: *See—*
Feinstone, Wolffe Harry; and Bandelin, Fred J., B 181,208.

Barbe, Gerard; and Deyres, Andre, to Rhone-Poulenc Textiles. Polyester fibers having wool-like hand and process for producing same. B 495,124, Cl. 57-140.0BY.

Barnes, Philip E., to United Technologies Corporation. Cam-operated pitch-change apparatus. B 513,346, Cl. 416-157.00B.

BASF Aktiengesellschaft: *See—*
Fischer, Adolf; Hansen, Hanspeter; and Rohr, Wolfgang, B 484,419.
Wurmb, Rolf; Mueller, Dietrich-Wolfgang; Dorst, Hans Georg; Bronstert, Klaus; and Theysohn, Rainer, B 507,456.

Bell Telephone Laboratories, Incorporated: *See—*
Mathes, Robert C., B 504,899.

Berg, Gerhard; Nordsiek, Karl-Heinz; Maahs, Gunter; and Schanzer, Wilhelm, to Chemische Werke Huels Aktiengesellschaft. Pourable elastomeric particles. B 520,658, Cl. 260-33.6AQ.

Block Engineering, Inc.: *See—*
Hirschfeld, Tomas, B 517,504.

Bluestone, Henry; Scozzie, James A.; and Ignatoski, Joseph A., to Diamond Shamrock Corporation. α-chloroacetanilide selective herbicides. B 413,379, Cl. 260-562.00B.

Bolliger, Edwin. Drive mechanism for a movable platen. B 548,978, Cl. 93-58.300.

Bradley, Walter Eugene; Clontz, Raeford Warren; Floyd, Terry Stephen; and Honeycutt, James Reed, to Celanese Corporation. Filament breakage detection and correction. B 506,624, Cl. 226-1.000.

Braun Aktiengesellschaft: *See—*
Schroder, Adolf; and Klauer, Hans Dieter, B 473,813.

Briska, Marian; and Hoffmeister, Wolfgang, to International Business Machines Corporation. Method of purifying ammonium fluoride solutions. B 521,612, Cl. 423-471.000.

Bronstert, Klaus: *See—*
Wurmb, Rolf; Mueller, Dietrich-Wolfgang; Dorst, Hans Georg; Bronstert, Klaus; and Theysohn, Rainer, B 507,456.

Brown, Roger S.; and Kotter, James I., to United States of America, Agriculture. Method of fiber distribution and ribbon forming. B 569,501, Cl. 19-155.000.

Carborundum Company, The: *See—*
Economy, James; Frechette, Francis J.; and Wohrer, Luis C., B 378,760.

Caterpillar Tractor Co.: *See—*
Rhoads, Kenneth A., B 097,259.

Celanese Corporation: *See—*
Bradley, Walter Eugene; Clontz, Raeford Warren; Floyd, Terry Stephen; and Honeycutt, James Reed, B 506,624.

Chamberlin, Thomas A.; and Madison, Norman L., to Dow Chemical Company, The. Oxazoline and/or oxazine-modified polymers. B 554,380, Cl. 260-2.50B.

Chemische Werke Huels Aktiengesellschaft: *See—*
Berg, Gerhard; Nordsiek, Karl-Heinz; Maahs, Gunter; and Schanzer, Wilhelm, B 520,658.

Chu, William M.; and Sonoda, George, to International Business Machines Corporation. Test technique for semiconductor memory array. B 483,268, Cl. 324-158.00R.

Ciszek, Theodore F., to International Business Machines Corporation. Method for drawing a monocrystal from a melt formed about a wettable projection. B 584,997, Cl. 156-608.000.

Clontz, Raeford Warren: *See—*
Bradley, Walter Eugene; Clontz, Raeford Warren; Floyd, Terry Stephen; and Honeycutt, James Reed, B 506,624.

Combustion Engineering, Inc.: *See—*
Epperson, Robert Allen, B 536,511.

Composite Structures Corporation: *See—*
Fetherston, William H.; and Teeter, Roger C., B 548,688.

Continental Oil Company: *See—*
Umphrey, Ronald W.; and McCain, David L., B 425,462.
Umphrey, Ronald W., B 462,828.

Cox, Robert N.; and Albers, Kenneth G., to UMC Industries, Inc. Spiral vendor. B 510,281, Cl. 221-75.000.

Davis, Joseph Calvin; Galiano, Francis Ross; and Hill, Robert William, to Gulf Research & Development Co. Fibril formation process. B 214,925, Cl. 264-140.000.

Davis, Leland E.: *See—*
Schneiter, Fred E.; Thompson, Arnold R.; Davis, Leland E.; and Kirchoff, George F., Jr., B 417,349.

Deyres, Andre: *See—*
Barbe, Gerard; and Deyres, Andre, B 495,124.

Diamond Shamrock Corporation: *See—*
Bluestone, Henry; Scozzie, James A.; and Ignatoski, Joseph A., B 413,379.

Dolejs, Anthony H.: *See—*
Novak, Frank A.; and Dolejs, Anthony H., B 435,481.

Dorst, Hans Georg: *See—*
Wurmb, Rolf; Mueller, Dietrich-Wolfgang; Dorst, Hans Georg; Bronstert, Klaus; and Theysohn, Rainer, B 507,456.

Dow Chemical Company, The: *See—*
Chamberlin, Thomas A.; and Madison, Norman L., B 554,380.
Grinstead, Robert R., B 467,328.

Du Pont de Nemours, E. I., and Company: *See—*
Anderson, Arthur William; and Stamatoff, Gelu Stoeff, B 632,416.

Dynapar Corporation: *See—*
Willits, David L., B 503,618.

Ebauches S.A.: *See—*
Vogt, Paul, B 493,981.

Economy, James; Frechette, Francis J.; and Wohrer, Luis C., to Carborundum Company, The. Flame resistant cloth. B 378,760, Cl. 428-224.000.

Ellin, Seymour, to Polaroid Corporation. Photographic control system with evaluation control. B 492,774, Cl. 354-23.00D.

Epperson, Robert Allen, to Combustion Engineering, Inc. Split ring burner for weld preheat. B 536,511, Cl. 432-49.000.

Extracorporeal Medical Specialties, Inc.: *See—*
Miller, Frederick W., III, B 470,601.

Falckenberg, Richard, to Siemens Aktiengesellschaft. Apparatus for producing monocrystals by the Verneuil technique. B 563,165, Cl. 23-273.00V.

Feinstone, Wolffe Harry; and Bandelin, Fred J., to Plough, Inc. Means for depositing aerosol sprays in buttery form. B 181,208, Cl. 424-45.000.

Fetherston, William H.; and Teeter, Roger C., to Composite Structures Corporation. Matching dies for composite cored structures. B 548,688, Cl. 425-521.000.

Fischer, Adolf; Hansen, Hanspeter; and Rohr, Wolfgang, to BASF Aktiengesellschaft. Sulfites of aromatic glycolic amides. B 484,419, Cl. 260-456.0NS.

Floyd, Terry Stephen: *See—*
Bradley, Walter Eugene; Clontz, Raeford Warren; Floyd, Terry Stephen; and Honeycutt, James Reed, B 506,624.

Frechette, Francis J.: *See—*
Economy, James; Frechette, Francis J.; and Wohrer, Luis C., B 378,760.

Fuller, Robert R., to Westinghouse Electric Corporation. Production of ammonium diuranate. B 372,722, Cl. 423-15.000.

Furuhashi, Michio: *See—*
Nagaoka, Yoshitomi; and Furuhashi, Michio, B 073,017.

G. D. Searle & Co.: *See—*
Yonan, Peter K., B 571,638.

Gakeler, George H.: *See—*
Joyal, George J.; and Gakeler, George H., B 498,820.

Galiano, Francis Ross: *See—*
Davis, Joseph Calvin; Galiano, Francis Ross; and Hill, Robert William, B 214,925.

General Motors Corporation: *See—*
Kaas, Roger L., B 456,069.

Gerecke, Max; Kaplan, Jean-Pierre; and Kyburz, Emilio, to Hoffman-La Roche Inc. 1-[10,11-Dihydro-dibenzo[b,f]-thiepin-10-yl]-4-(alkynylalkyl)-piperazines. B 539,374, Cl. 260-268.0TR.

Goser, Karl; and Pomper, Michael, to Siemens Aktiengesellschaft. Static semiconductor storage element. B 495,185, Cl. 340-173.0FF.

Graul, Juergen; and Murrmann, Helmuth, to Siemens Aktiengesellschaft. Process for producing semiconductor devices. B 554,164, Cl. 148-187.000.

Grim, Stig Henrik, to Siemens Aktiengesellschaft. Installation for producing radiological angiographic exposures. B 491,650, Cl. 235-151.000.

Grinstead, Robert R., to Dow Chemical Company, The. Extraction of carboxylic acids from dilute aqueous solutions. B 467,328, Cl. 260-527.00R.

Gulf Research & Development Co.: *See—*
Davis, Joseph Calvin; Galiano, Francis Ross; and Hill, Robert William, B 214,925.

Hansen, Hanspeter: *See—*
Fischer, Adolf; Hansen, Hanspeter; and Rohr, Wolfgang, B 484,419.

Hanson, Richard Eric, to RCA Corporation. Acceleration burst test apparatus and method for internal combustion engines. B 569,859, Cl. 73-116.000.

Hester, Jackson B., Jr., to Upjohn Company, The. 1-Piperazino-6-(2-pyridyl)-4H-S-triazolo[4,3-a][1,4]benzodiazepines. B 563,070, Cl. 260-268.0TR.

Hill, Robert William: *See—*
Davis, Joseph Calvin; Galiano, Francis Ross; and Hill, Robert William, B 214,925.

Hirschfeld, Tomas, to Block Engineering, Inc. Illumination system. B 517,504, Cl. 356-103.000.

Hitchler, Edward Willard: *See—*
Nixon, Wayne Robert; Hitchler, Edward Willard; and Kubacki, Edward Frank, B 223,678.

Hoffman-La Roche Inc.: *See—*
Gerecke, Max; Kaplan, Jean-Pierre; and Kyburz, Emilio, B 539,374.

Hoffmann-La Roche Inc.: *See—*
Infeld, Martin Howard; and Newmark, Harold Leon, B 493,955.
Saucy, Gabriel, B 450,693.
Saucy, Gabriel, B 450,708.

Hoffmeister, Wolfgang: *See—*
Briska, Marian; and Hoffmeister, Wolfgang, B 521,612.

Honeycutt, James Reed: *See—*
Bradley, Walter Eugene; Clontz, Raeford Warren; Floyd, Terry Stephen; and Honeycutt, James Reed, B 506,624.

Ignatoski, Joseph A.: *See—*
Bluestone, Henry; Scozzie, James A.; and Ignatoski, Joseph A., B 413,379.

Infeld, Martin Howard; and Newmark, Harold Leon, to Hoffmann-La Roche Inc. Stabilization of copper complexes of 6-methoxy-1-phenazinol 5,10-dioxide. B 493,955, Cl. 424-245.000.

Intercooperation Kereskedelemfejlesztesi Rt.: *See—*
Slezak, Istvan, B 311,450.

International Business Machines Corporation: *See—*
Aronstein, Jesse; Leoff, Arkady; Murphy, John J.; and Ruder, Winfield S., B 476,967.
Briska, Marian; and Hoffmeister, Wolfgang, B 521,612.
Chu, William M.; and Sonoda, George, B 483,268.
Ciszek, Theodore F., B 584,997.
Lazzarini, Donald J.; and Sarnacki, Frank H., B 527,972.
Sonoda, George, B 444,437.

Joyal, George J.; and Gakeler, George H., to United Technologies Corporation. Protractor with digital readout. B 498,820, Cl. 33-174.00S.

Kaas, Roger L., to General Motors Corporation. Transparent abrasion-resistant coating for a styrene acrylonitrile copolymer and method. B 456,069, Cl. 428-447.000.

Kaplan, Jean-Pierre: *See—*
Gerecke, Max; Kaplan, Jean-Pierre; and Kyburz, Emilio, B 539,374.

Karger, Eva R.; and MacGregor, Paul T., to Polaroid Corporation. 3,3-Disubstituted phthalides and naphthalides. B 456,869, Cl. 260-326.13R.

Kilgore, Lee A.: *See—*
South, William H.; and Kilgore, Lee A., B 466,318.

Kinoshita, Kazuhisa; and Yamaguchi, Tetsuo, to Nippon Kokan Kabushiki Kaisha. Process of manufacturing heat resisting steel sheet for deep drawing. B 459,381, Cl. 148-36.000.

Kirchoff, George F., Jr.: *See—*
Schneiter, Fred E.; Thompson, Arnold R.; Davis, Leland E.; and Kirchoff, George F., Jr., B 417,349.

Klauer, Hans Dieter: *See—*
Schroder, Adolf; and Klauer, Hans Dieter, B 473,813.

Knohl, Richard B.; and Zeffren, Eugene, to Procter & Gamble Company, The. Hair bleaching compositions containing an arginine compound. B 464,593, Cl. 424-62.000.

Kolbow, Peter: *See—*
Weiss, Herbert; Maurer, Otto; and Kolbow, Peter, B 399,632.

Kotter, James I.: *See—*
Brown, Roger S.; and Kotter, James I., B 569,501.

Kraft, Erich: *See—*
Puritz, Ernst; and Kraft, Erich, B 328,116.

Kubacki, Edward Frank: *See—*
Nixon, Wayne Robert; Hitchler, Edward Willard; and Kubacki, Edward Frank, B 223,678.

Kyburz, Emilio: *See—*
Gerecke, Max; Kaplan, Jean-Pierre; and Kyburz, Emilio, B 539,374.

Lazzarini, Donald J.; and Sarnacki, Frank H., to International Business Machines Corporation. Water soluble fluxes. B 527,972, Cl. 148-23.000.

Leoff, Arkady: *See—*
Aronstein, Jesse; Leoff, Arkady; Murphy, John J.; and Ruder, Winfield S., B 476,967.

Lockheed Aircraft Corporation: *See—*
Zimmer, George F., B 419,173.

Lugscheider, Walter: *See—*
Unger, Willibald-Karl; and Lugscheider, Walter, B 472,276.

Maahs, Gunter: *See—*
Berg, Gerhard; Nordsiek, Karl-Heinz; Maahs, Gunter; and Schanzer, Wilhelm, B 520,658.

MacGregor, Paul T.: *See—*
Karger, Eva R.; and MacGregor, Paul T., B 456,869.

Madison, Norman L.: *See—*
Chamberlin, Thomas A.; and Madison, Norman L., B 554,380.

Maguire, Edward John, Jr., to Procter & Gamble Company, The. Automatic dishwashing detergent composition. B 479,969, Cl. 252-105.000.

Marquez, Joseph A.: *See—*
Weinstein, Marvin J.; Wagman, Gerald H.; and Marquez, Joseph A., B 554,291.

Mathes, Robert C., to Bell Telephone Laboratories, Incorporated. Speech component coded multiplex carrier wave transmission. B 504,899, Cl. 179-1.5FS.

Matsushita Electric Industrial Co., Ltd.: *See—*
Nagaoka, Yoshitomi; and Furuhashi, Michio, B 073,017.

Maurer, Otto: *See—*
Weiss, Herbert; Maurer, Otto; and Kolbow, Peter, B 399,632.

McCain, David L.: *See—*
Umphrey, Ronald W.; and McCain, David L., B 425,462.

Miller, Frederick W., III, to Extracorporeal Medical Specialties, Inc. Dialyzer coil with porous support for membrane. B 470,601, Cl. 210-321.00A.

Mueller, Dietrich-Wolfgang: *See—*
Wurmb, Rolf; Mueller, Dietrich-Wolfgang; Dorst, Hans Georg; Bronstert, Klaus; and Theysohn, Rainer, B 507,456.

Murphy, John J.: *See—*
Aronstein, Jesse; Leoff, Arkady; Murphy, John J.; and Ruder, Winfield S., B 476,967.

Murrmann, Helmuth: *See—*
Graul, Juergen; and Murrmann, Helmuth, B 554,164.

Nagaoka, Yoshitomi; and Furuhashi, Michio, to Matsushita Electric Industrial Co., Ltd. Automatic hue-control apparatus for color television receivers. B 073,017, Cl. 358-28.000.

Newmark, Harold Leon: *See—*
Infeld, Martin Howard; and Newmark, Harold Leon, B 493,955.

Nippon Kokan Kabushiki Kaisha: *See—*
Kinoshita, Kazuhisa; and Yamaguchi, Tetsuo, B 459,381.

Nixon, Wayne Robert; Hitchler, Edward Willard; and Kubacki, Edward Frank, to American Can Company. Drawn and ironed steel container with inclusions and spheroidal carbides. B 223,678, Cl. 220-66.000.

Nordsiek, Karl-Heinz: *See—*
Berg, Gerhard; Nordsiek, Karl-Heinz; Maahs, Gunter; and Schanzer, Wilhelm, B 520,658.

Novak, Frank A.; and Dolejs, Anthony H., to Ardac, Inc. Note storage apparatus. B 435,481, Cl. 271-180.000.

Ogura, Katsuyuki: *See—*
Tsuchihashi, Genichi; and Ogura, Katsuyuki, B 446,107.

Okano, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Resiliently mounted gas bearing device. B 391,797, Cl. 308-9.000.

Plough, Inc.: *See—*
Feinstone, Wolffe Harry; and Bandelin, Fred J., B 181,208.

Polaroid Corporation: *See—*
Ellin, Seymour, B 492,774.
Karger, Eva R.; and MacGregor, Paul T., B 456,869.

Pomper, Michael: *See—*
Goser, Karl; and Pomper, Michael, B 495,185.

Procter & Gamble Company, The: *See—*
Knohl, Richard B.; and Zeffren, Eugene, B 464,593.
Maguire, Edward John, Jr., B 479,969.

Puritz, Ernst; and Kraft, Erich, to Apparatebau Rothemuhle Brandt & Kritzler. Regenerative air preheater with automatically adjustable sealing device. B 328,116, Cl. 165-4.000.

RCA Corporation: *See—*
Hanson, Richard Eric, B 569,859.
Woywood, Dennis Joseph, B 468,100.

Rhoads, Kenneth A., to Caterpillar Tractor Co. Ripper tip with interfitting shin guard retaining means. B 097,259, Cl. 172-719.000.

Rhone-Poulenc Textiles: *See—*
Barbe, Gerard; and Deyres, Andre, B 495,124.

Rohr, Wolfgang: *See—*
Fischer, Adolf; Hansen, Hanspeter; and Rohr, Wolfgang, B 484,419.

Ruder, Winfield S.: *See—*
Aronstein, Jesse; Leoff, Arkady; Murphy, John J.; and Ruder, Winfield S., B 476,967.

Ruti Machinery Works Ltd.: *See—*
Weidmann, Erwin, B 527,171.

Sagami Chemical Research Center: *See—*
Tsuchihashi, Genichi; and Ogura, Katsuyuki, B 446,107.

Sarantakis, Dimitrios, to American Home Products Corporation. (Tyr^3, Tyr^{14})-SRIF and intermediates. B 520,514, Cl. 260-112.50R.

Sarnacki, Frank H.: *See—*
Lazzarini, Donald J.; and Sarnacki, Frank H., B 527,972.

Saucy, Gabriel, to Hoffmann-La Roche Inc. Alkynylation process. B 450,693, Cl. 260-397.400.

Saucy, Gabriel, to Hoffmann-La Roche Inc. Tetrahydropyran-2-ols. B 450,708, Cl. 260-345.900.

Schanzer, Wilhelm: *See—*
Berg, Gerhard; Nordsiek, Karl-Heinz; Maahs, Gunter; and Schanzer, Wilhelm, B 520,658.

Schering Corporation: *See—*
Weinstein, Marvin J.; Wagman, Gerald H.; and Marquez, Joseph A., B 554,291.
Schneiter, Fred E.; Thompson, Arnold R.; Davis, Leland E.; and Kirchoff, George F., Jr., to Thiokol Corporation. Gas generator. B 417,349, Cl. 102-39.000.
Schroder, Adolf; and Klauer, Hans Dieter, to Braun Aktiengesellschaft. Gas lighter. B 473,813, Cl. 141-294.000.
Scozzie, James A.: *See—*
Bluestone, Henry; Scozzie, James A.; and Ignatoski, Joseph A., B 413,379.
Shionogi & Company, Ltd.: *See—*
Tanida, Hiroshi; and Tsuji, Teruji, B 372,016.
Siemens Aktiengesellschaft: *See—*
Falckenberg, Richard, B 563,165.
Goser, Karl; and Pomper, Michael, B 495,185.
Graul, Juergen; and Murrmann, Helmuth, B 554,164.
Grim, Stig Henrik, B 491,650.
Unger, Willibald-Karl; and Lugscheider, Walter, B 472,276.
Weiss, Herbert; Maurer, Otto; and Kolbow, Peter, B 399,632.
Slezak, Istvan, to Intercooperation Kereskedelemfejlesztesi Rt. Equipment for the improvement of the efficiency of drying shelled maize. B 311,450, Cl. 99-485.000.
Sonoda, George, to International Business Machines Corporation. Decoder driver circuit for monolithic memories. B 444,437, Cl. 307-205.000.
Sonoda, George: *See—*
Chu, William M.; and Sonoda, George, B 483,268.
Sony Corporation: *See—*
Arai, Michio, B 480,749.
Yamada, Takaaki, B 504,503.
South, William H.; and Kilgore, Lee A., to Westinghouse Electric Corporation. Dynamic stabilizer for synchronous machines having torsional oscillations and method. B 466,318, Cl. 322-25.000.
Stamatoff, Gelu Stoeff: *See—*
Anderson, Arthur William; and Stamatoff, Gelu Stoeff, B 632,416.
Tanida, Hiroshi; and Tsuji, Teruji, to Shionogi & Company, Ltd. Process for making a 2'-halopenicillin. B 372,016, Cl. 260-239.100.
Teeter, Roger C.: *See—*
Fetherston, William H.; and Teeter, Roger C., B 548,688.
Theysohn, Rainer: *See—*
Wurmb, Rolf; Mueller, Dietrich-Wolfgang; Dorst, Hans Georg; Bronstert, Klaus; and Theysohn, Rainer, B 507,456.
Thiokol Corporation: *See—*
Schneiter, Fred E.; Thompson, Arnold R.; Davis, Leland E.; and Kirchoff, George F., Jr., B 417,349.
Thompson, Arnold R.: *See—*
Schneiter, Fred E.; Thompson, Arnold R.; Davis, Leland E.; and Kirchoff, George F., Jr., B 417,349.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Okano, Hiroshi, B 391,797.
Tsuchihashi, Genichi; and Ogura, Katsuyuki, to Sagami Chemical Research Center. α-Alkyl(or aryl)thio-5-hydroxytryptophan derivative and the preparation process thereof. B 446,107, Cl. 260-326.12R.
Tsuji, Teruji: *See—*
Tanida, Hiroshi; and Tsuji, Teruji, B 372,016.
UMC Industries, Inc.: *See—*
Cox, Robert N.; and Albers, Kenneth G., B 510,281.
Umphrey, Ronald W.; and McCain, David L., to Continental Oil Company. Scalping apparatus for a low profile two-roll crusher. B 425,462, Cl. 241-81.000.
Umphrey, Ronald W., to Continental Oil Company. Low profile sump with submerged transverse roll crusher. B 462,828, Cl. 241-46.110.
Unger, Willibald-Karl; and Lugscheider, Walter, to Siemens Aktiengesellschaft. Method of storing magnetically coded data in a magneto-optical semiconductor layer. B 472,276, Cl. 340-174.0TF.
United States of America
Agriculture: *See—*
Brown, Roger S.; and Kotter, James I., B 569,501.
United Technologies Corporation: *See—*
Barnes, Philip E., B 513,346.
Joyal, George J.; and Gakeler, George H., B 498,820.
Upjohn Company, The: *See—*
Hester, Jackson B., Jr., B 563,070.
Vogt, Paul, to Ebauches S.A. Mechanic digital display device. B 493,981, Cl. 40-28.00C.
Wagman, Gerald H.: *See—*
Weinstein, Marvin J.; Wagman, Gerald H.; and Marquez, Joseph A., B 554,291.
Weidmann, Erwin, to Ruti Machinery Works Ltd. Weft band with carrier for looper looms. B 527,171, Cl. 139-122.00R.
Weinstein, Marvin J.; Wagman, Gerald H.; and Marquez, Joseph A., to Schering Corporation. Antibiotic G-52 and method for the production thereof. B 554,291, Cl. 260-210.0AB.
Weiss, Herbert; Maurer, Otto; and Kolbow, Peter, to Siemens Aktiengesellschaft. Thermoelement on semiconductor base. B 399,632, Cl. 136-205.000.
Westinghouse Electric Corporation: *See—*
Fuller, Robert R., B 372,722.
South, William H.; and Kilgore, Lee A., B 466,318.
Wethington, Charles A. Carpet machine. B 475,385, Cl. 156-435.000.
Willits, David L., to Dynapar Corporation. Rotary pulse transducer having stator sealing means. B 503,618, Cl. 250-231.0SE.
Wohrer, Luis C.: *See—*
Economy, James; Frechette, Francis J.; and Wohrer, Luis C., B 378,760.
Woywood, Dennis Joseph, to RCA Corporation. Charge coupled parallel-to-serial converter for scene scanning and display. B 468,100, Cl. 178-7.100.
Wurmb, Rolf; Mueller, Dietrich-Wolfgang; Dorst, Hans Georg; Bronstert, Klaus; and Theysohn, Rainer, to BASF Aktiengesellschaft. Glass-fiber-reinforced thermoplastic molding compositions showing improved flowability and toughness. B 507,456, Cl. 260-28.00R.
Yamada, Takaaki, to Sony Corporation. FET having a linear impedance characteristic over a wide range of frequency. B 504,503, Cl. 357-23.000.
Yamaguchi, Tetsuo: *See—*
Kinoshita, Kazuhisa; and Yamaguchi, Tetsuo, B 459,381.
Yonan, Peter K., to G. D. Searle & Co. 1-Aryl-3,4-dihydro-2(1H)-isoquinoline carbonyl chlorides. B 571,638, Cl. 260-287.00D.
Zeffren, Eugene: *See—*
Knohl, Richard B.; and Zeffren, Eugene, B 464,593.
Zimmer, George F., to Lockheed Aircraft Corporation. Escape vehicle with fly-away capability. B 419,173, Cl. 244-140.000.
Zimmer, Peter. Rotary screen registration system. B 395,554, Cl. 101-115.000.

CLASSIFICATION OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM

DATE PUBLISHED MARCH 9, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
Class 8			
10.2	B 430,334	C	Jan. 27, 1976
14	B 460,388	C	Jan. 27, 1976
	B 497,473	C	Feb. 3, 1976
17	B 458,060	C	Jan. 13, 1976
62	B 507,476	C	Feb. 10, 1976
74	B 354,959	C	Feb. 17, 1976
84	B 495,903	C	Feb. 17, 1976
115.7	B 389,304	C	Jan. 27, 1976
142	B 423,867	C	Feb. 3, 1976
161	B 461,352	C	Jan. 13, 1976
174	B 344,967	C	Feb. 3, 1976
Class 15			
147A	B 502,667	M	Feb. 24, 1976
229A	B 523,885	M	Feb. 17, 1976
256.53	B 579,116	M	Feb. 3, 1976
302	B 553,629	M	Feb. 24, 1976
Class 17			
23	B 519,599	M	Feb. 17, 1976
2502	B 541,496	E	Jan. 27, 1976
Class 19			
155	B 569,501	M	Mar. 9, 1976
Class 21			
2.7R	B 527,999	C	Feb. 3, 1976
Class 23			
230B	B 554,039	C	Feb. 24, 1976
273SP	B 431,785	C	Feb. 24, 1976
273V	B 563,165	C	Mar. 9, 1976
285F	B 565,180	C	Jan. 27, 1976
Class 24			
75	B 532,476	M	Feb. 3, 1976
Class 28			
1.6	B 497,292	M	Feb. 3, 1976
Class 29			
96	B 546,911	M	Jan. 13, 1976
127	B 510,855	M	Jan. 27, 1976
180SS	B 421,975	C	Mar. 2, 1976
237	B 503,436	M	Feb. 24, 1976
428	B 520,928	M	Jan. 13, 1976
578	B 561,732	M	Feb. 3, 1976
580	B 492,301	M	Jan. 13, 1976
Class 32			
10A	B 491,501	M	Jan. 13, 1976
Class 33			
174S	B 498,820	M	Mar. 9, 1976
Class 35			
36	B 511,454	M	Feb. 24, 1976
Class 37			
8	B 558,819	M	Feb. 3, 1976
57	B 531,753	M	Mar. 2, 1976
142A	B 511,099	M	Feb. 3, 1976
Class 40			
28C	B 493,981	M	Mar. 9, 1976
159	B 456,153	M	Mar. 9, 1976
Class 43			
129	B 442,866	M	Feb. 24, 1976
Class 44			
2	B 496,792	C	Feb. 17, 1976
Class 47			
57.6	B 548,028	M	Feb. 3, 1976
Class 48			
73	B 541,376	C	Feb. 17, 1976
358	B 576,859	M	Feb. 24, 1976
Class 51			
358	B 576,859	M	Feb. 24, 1976
Class 52			
207	B 459,597	M	Feb. 17, 1976
484	B 522,354	M	Jan. 20, 1976
Class 53			
77	B 508,878	M	Feb. 3, 1976
Class 55			
105	B 490,806	C	Feb. 3, 1976
352	B 543,941	C	Jan. 13, 1976
Class 56			
14.5	B 549,244	M	Jan. 27, 1976
15.9	B 558,973	M	Feb. 10, 1976
Class 57			
140BY	B 495,124	M	Mar. 9, 1976
Class 58			
21.13	B 516,825	M	Feb. 3, 1976
Class 60			
226A	B 445,459	M	Feb. 3, 1976
299	B 551,133	M	Mar. 2, 1976
304	B 502,540	M	Jan. 13, 1976
349	B 541,464	M	Feb. 17, 1976
422	B 526,445	M	Jan. 20, 1976
424	B 584,520	M	Jan. 27, 1976
425	B 535,386	M	Jan. 13, 1976
431	B 551,809	M	Feb. 24, 1976
445	B 400,871	M	Feb. 17, 1976
592	B 465,145	M	Jan. 27, 1976
645	B 538,472	M	Feb. 3, 1976
690	B 505,689	M	Mar. 2, 1976
706	B 509,238	M	Feb. 24, 1976
Class 61			
.5	B 554,283	M	Jan. 27, 1976
Class 62			
306	B 522,009	M	Feb. 17, 1976
353	B 564,314	M	Jan. 20, 1976
Class 64			
27L	B 509,043	M	Feb. 24, 1976
Class 65			
3A	B 532,969	C	Jan. 13, 1976
49	B 517,858	C	Feb. 17, 1976
239	B 545,777	C	Jan. 27, 1976
Class 66			
116	B 438,882	M	Feb. 24, 1976
Class 71			
113	B 535,076	C	Jan. 20, 1976
Class 72			
43	B 546,631	M	Feb. 3, 1976
56	B 489,290	M	Feb. 17, 1976
88	B 575,757	M	Jan. 27, 1976
391	B 516,537	M	Feb. 17, 1976
Class 73			
24	B 506,744	M	Jan. 13, 1976
29	B 557,153	M	Feb. 3, 1976
37.7	B 532,319	M	Feb. 3, 1976
61.1R	B 511,909	M	Feb. 17, 1976
67.5H	B 522,309	M	Feb. 3, 1976
116	B 569,859	M	Mar. 9, 1976
147	B 521,620	M	Jan. 27, 1976
190R	B 480,350	M	Feb. 10, 1976
302	B 464,290	M	Feb. 3, 1976
422GC	B 490,547	M	Feb. 24, 1976
432R	B 415,021	M	Mar. 2, 1976
437	B 528,401	M	Feb. 3, 1976
557	B 523,080	M	Feb. 17, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
Class 74			
18.2	B 501,975	M	Mar. 2, 1976
242.1A	B 567,854	M	Feb. 3, 1976
243C	B 558,818	M	Jan. 13, 1976
479	B 509,586	M	Feb. 3, 1976
481	B 497,021	M	Jan. 13, 1976
482	B 525,809	M	Feb. 24, 1976
527	B 470,170	M	Jan. 13, 1976
546	B 518,999	M	Feb. 3, 1976
765	B 500,945	M	Feb. 24, 1976
Class 75			
.5BA	B 385,631	C	Jan. 27, 1976
84.1R	B 538,491	C	Feb. 17, 1976
101BE	B 452,938	C	Feb. 17, 1976
135	B 525,961	C	Jan. 13, 1976
156.5	B 411,471	C	Feb. 17, 1976
165	B 483,256	C	Feb. 10, 1976
Class 83			
61	B 570,862	M	Feb. 24, 1976
425	B 545,935	M	Jan. 27, 1976
Class 84			
1.16	B 556,897	M	Feb. 3, 1976
275	B 504,169	M	Jan. 13, 1976
Class 86			
1R	B 356,187	M	Jan. 20, 1976
Class 93			
58.3	B 548,978	M	Mar. 9, 1976
Class 96			
1R	B 423,883	C	Jan. 27, 1976
1.4	B 200,759	C	Feb. 3, 1976
33	B 437,894	C	Mar. 2, 1976
35	B 524,026	C	Feb. 10, 1976
35.1	B 462,893	C	Feb. 24, 1976
	B 530,873	C	Feb. 17, 1976
36.1	B 359,901	C	Jan. 13, 1976
45	B 455,759	C	Feb. 24, 1976
54	B 367,305	C	Mar. 2, 1976
78	B 503,029	C	Jan. 27, 1976
Class 99			
162B	B 432,991	M	Mar. 2, 1976
335	B 557,299	M	Feb. 3, 1976
485	B 311,450	M	Mar. 9, 1976
Class 101			
93.13	B 496,999	M	Jan. 27, 1976
93.14	B 481,600	M	Jan. 27, 1976
115	B 395,554	M	Mar. 9, 1976
129	B 416,589	M	Jan. 27, 1976
401.3	B 494,234	M	Feb. 10, 1976
Class 102			
32	B 405,726	M	Jan. 13, 1976
39	B 417,349	M	Mar. 9, 1976
42R	B 443,163	M	Feb. 3, 1976
69	B 412,068	M	Jan. 13, 1976
Class 106			
27	B 452,883	C	Jan. 27, 1976
57	B 502,773	C	Jan. 13, 1976
309	B 311,779	C	Feb. 10, 1976
Class 109			
1SB	B 358,427	E	Feb. 3, 1976
Class 110			
8R	B 512,324	M	Feb. 17, 1976
Class 114			
144R	B 529,659	M	Feb. 24, 1976
Class 116			
124L	B 469,228	M	Feb. 17, 1976
124.4	B 467,412	M	Jan. 13, 1976
Class 118			
637	B 563,301	M	Feb. 17, 1976
Class 123			
8.45	B 570,172	M	Feb. 3, 1976
25R	B 447,440	M	Feb. 17, 1976
75B	B 563,780	M	Feb. 3, 1976
122AC	B 498,951	M	Mar. 2, 1976
148E	B 480,473	M	Mar. 2, 1976
182	B 558,251	M	Jan. 13, 1976
325T	B 425,588	M	Jan. 13, 1976

		CAT.	PUB. DATE
Class 126			
271	B 512,745	M	Jan. 13, 1976
350A	B 537,903	M	Jan. 20, 1976
Class 128			
2.6R	B 534,574	M	Feb. 24, 1976
260	B 520,277	M	Feb. 17, 1976
	B 524,121	M	Feb. 3, 1976
419P	B 535,466	M	Jan. 27, 1976
419PG	B 533,259	M	Feb. 24, 1976
Class 131			
144	B 586,387	M	Feb. 3, 1976
514.4	B 586,380	M	Mar. 2, 1976
Class 136			
26	B 511,665	C	Mar. 2, 1976
86R	B 505,126	C	Feb. 10, 1976
	B 574,128	C	Feb. 17, 1976
89	B 510,677	C	Feb. 24, 1976
148	B 524,464	C	Feb. 10, 1976
202	B 378,513	C	Jan. 27, 1976
205	B 399,632	C	Mar. 9, 1976
Class 137			
255	B 508,940	M	Feb. 17, 1976
596.12	B 514,687	M	Jan. 27, 1976
608	B 490,623	M	Mar. 2, 1976
614.11	B 530,605	M	Feb. 3, 1976
625.46	B 528,756	M	Feb. 3, 1976
798	B 430,172	M	Jan. 13, 1976
Class 139			
122R	B 527,171	M	Mar. 9, 1976
Class 140			
92.1	B 590,158	M	Feb. 10, 1976
	B 590,159	M	Feb. 3, 1976
Class 141			
294	B 473,813	M	Mar. 9, 1976
Class 144			
32R	B 484,332	M	Mar. 2, 1976
34R	B 521,793	M	Feb. 24, 1976
241	B 545,630	M	Jan. 27, 1976
Class 148			
1.5	B 518,226	C	Feb. 10, 1976
23	B 527,972	C	Mar. 9, 1976
36	B 459,381	C	Mar. 9, 1976
187	B 554,164	C	Mar. 9, 1976
Class 152			
213R	B 445,690	M	Feb. 3, 1976
Class 156			
3	B 563,722	C	Jan. 13, 1976
66	B 497,584	C	Feb. 24, 1976
71	B 456,148	C	Jan. 13, 1976
73.6	B 414,481	C	Jan. 20, 1976
143	B 462,386	C	Jan. 13, 1976
159	B 339,446	C	Feb. 24, 1976
435	B 475,385	C	Mar. 9, 1976
608	B 584,997	C	Mar. 9, 1976
Class 160			
229R	B 505,813	M	Jan. 13, 1976
Class 162			
5	B 491,673	C	Feb. 17, 1976
133	B 431,072	C	Jan. 20, 1976
198	B 150,142	C	Jan. 27, 1976
290	B 478,739	C	Feb. 17, 1976
Class 164			
26	B 499,227	M	Jan. 27, 1976
60	B 511,885	M	Jan. 27, 1976
282	B 396,916	M	Mar. 2, 1976
330	B 522,038	M	Feb. 3, 1976
Class 165			
4	B 328,116	M	Mar. 9, 1976
13	B 543,078	M	Feb. 17, 1976
Class 166			
224	B 492,120	M	Feb. 24, 1976
272	B 569,519	M	Feb. 3, 1976
303	B 529,836	M	Feb. 3, 1976
311	B 511,156	M	Jan. 27, 1976
Class 172			
719	B 97,259	M	Mar. 9, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
Class 173			
104	B 537,709	M	Jan. 13, 1976
170	B 567,058	M	Jan. 13, 1976
Class 174			
52R	B 492,902	E	Feb. 24, 1976
Class 176			
20R	B 384,330	C	Jan. 27, 1976
36R	B 367,621	C	Feb. 3, 1976
68	B 396,164	C	Feb. 3, 1976
Class 178			
6	B 546,426	E	Jan. 27, 1976
7.1	B 468,100	E	Mar. 9, 1976
	B 519,979	E	Feb. 3, 1976
7.3D	B 442,970	E	Feb. 3, 1976
7.5R	B 508,817	E	Feb. 3, 1976
58R	B 399,908	C	Jan. 13, 1976
66R	B 498,775	E	Mar. 2, 1976
88	B 561,764	E	Jan. 27, 1976
Class 179			
1A	B 513,756	E	Feb. 3, 1976
1CN	B 475,681	E	Jan. 20, 1976
1SM	B 476,577	E	Jan. 20, 1976
1G	B 554,594	E	Jan. 20, 1976
1.5FS	B 504,899	E	Mar. 9, 1976
7.1R	B 545,050	E	Jan. 20, 1976
15AL	B 496,500	E	Feb. 3, 1976
81R	B 472,284	E	Jan. 13, 1976
170D	B 541,415	E	Feb. 3, 1976
Class 180			
5R	B 499,171	M	Jan. 27, 1976
44F	B 432,969	M	Mar. 2, 1976
49	B 433,094	M	Jan. 27, 1976
53R	B 551,527	M	Jan. 13, 1976
79.2R	B 533,968	M	Jan. 27, 1976
103	B 490,647	M	Feb. 24, 1976
Class 187			
1R	B 436,724	M	Feb. 24, 1976
Class 188			
71.1	B 535,411	M	Feb. 24, 1976
73.6	B 533,056	M	Jan. 13, 1976
165	B 567,435	M	Feb. 3, 1976
218XL	B 562,698	M	Jan. 13, 1976
Class 192			
3.57	B 548,719	M	Feb. 17, 1976
4A	B 531,267	M	Feb. 24, 1976
Class 195			
1.8	B 530,255	E	Mar. 2, 1976
	B 514,839	C	Mar. 2, 1976
29	B 418,489	C	Jan. 13, 1976
65	B 566,585	C	Mar. 2, 1976
	B 592,146	C	Mar. 2, 1976
68	B 395,975	C	Mar. 2, 1976
Class 196			
14.52	B 520,384	M	Jan. 27, 1976
Class 197			
17	B 501,122	M	Feb. 17, 1976
18	B 535,391	M	Jan. 27, 1976
Class 198			
38	B 495,402	M	Feb. 17, 1976
129	B 569,646	M	Jan. 13, 1976
179	B 424,989	M	Feb. 3, 1976
202	B 499,352	M	Jan. 27, 1976
Class 200			
5R	B 579,104	E	Jan. 27, 1976
11TC	B 531,425	E	Feb. 3, 1976
16C	B 480,740	E	Mar. 2, 1976
38FA	B 494,383	E	Feb. 3, 1976
61.41	B 506,286	E	Jan. 20, 1976
67D	B 585,247	E	Feb. 3, 1976
83SA	B 428,877	E	Jan. 27, 1976
84C	B 453,533	E	Feb. 17, 1976
309	B 470,899	E	Mar. 2, 1976
339	B 466,390	E	Feb. 24, 1976
Class 202			
227	B 513,280	C	Jan. 20, 1976
Class 204			
9	B 462,424	C	Feb. 24, 1976
15	B 542,135	C	Feb. 10, 1976
158HA	B 550,744	C	Feb. 17, 1976
159.18	B 498,205	C	Feb. 10, 1976
159.22	B 423,404	C	Mar. 2, 1976
163R	B 526,447	C	Feb. 24, 1976
181	B 167,470	C	Mar. 2, 1976
195P	B 511,002	C	Mar. 2, 1976
195S	B 843,038	C	Feb. 3, 1976
224M	B 534,314	C	Feb. 10, 1976
Class 206			
451	B 371,912	M	Mar. 2, 1976
455	B 490,067	M	Jan. 27, 1976
Class 208			
15	B 437,596	C	Jan. 27, 1976
59	B 508,118	C	Feb. 17, 1976
78	B 467,250	C	Feb. 3, 1976
208R	B 508,119	C	Feb. 17, 1976
210	B 501,317	C	Jan. 13, 1976
253	B 438,916	C	Jan. 13, 1976
Class 210			
23H	B 364,797	C	Feb. 17, 1976
	B 524,806	C	Mar. 2, 1976
130	B 532,901	C	Jan. 13, 1976
189	B 492,716	C	Mar. 2, 1976
321A	B 470,601	C	Mar. 9, 1976
Class 214			
1C	B 453,238	M	Mar. 2, 1976
18N	B 373,344	M	Feb. 3, 1976
58	B 555,772	M	Jan. 13, 1976
152	B 480,604	M	Jan. 13, 1976
Class 215			
216	B 541,015	M	Jan. 27, 1976
Class 219			
69M	B 426,227	E	Mar. 2, 1976
201	B 451,248	E	Mar. 2, 1976
233	B 463,388	E	Feb. 10, 1976
273	B 403,507	E	Feb. 10, 1976
553	B 513,027	E	Feb. 17, 1976
Class 220			
23.83	B 529,156	M	Jan. 13, 1976
66	B 223,678	M	Mar. 9, 1976
288	B 516,032	M	Jan. 27, 1976
337	B 578,447	M	Jan. 20, 1976
Class 221			
75	B 510,281	M	Mar. 9, 1976
Class 222			
43	B 497,853	M	Feb. 17, 1976
67	B 521,480	M	Jan. 13, 1976
136	B 487,260	M	Jan. 27, 1976
306	B 559,954	M	Feb. 3, 1976
325	B 515,303	M	Jan. 20, 1976
Class 226			
1	B 506,624	M	Mar. 9, 1976
21	B 504,778	M	Feb. 24, 1976
68	B 506,926	M	Feb. 17, 1976
Class 228			
190	B 473,972	M	Jan. 13, 1976
Class 229			
2.5	B 537,990	M	Jan. 13, 1976
17R	B 461,257	M	Jan. 13, 1976
62.5	B 429,157	M	Jan. 27, 1976
Class 235			
151	B 491,650	E	Mar. 9, 1976
151.1	B 520,063	E	Mar. 2, 1976
	B 520,075	E	Feb. 24, 1976
	B 520,076	E	Mar. 2, 1976
151.34	B 492,946	E	Jan. 27, 1976
152	B 559,737	E	Jan. 20, 1976
154	B 534,016	E	Feb. 3, 1976
156	B 536,009	E	Jan. 27, 1976
181	B 520,924	E	Jan. 27, 1976
Class 236			
13	B 502,652	M	Feb. 24, 1976
15A	B 558,813	M	Feb. 3, 1976
Class 239			
424	B 580,921	M	Jan. 13, 1976
424	B 586,215	M	Jan. 20, 1976
652	B 520,534	M	Feb. 17, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
Class 240			
41.35R	B 454,283	E	Feb. 3, 1976
Class 241			
46.11	B 462,828	M	Mar. 9, 1976
81	B 425,462	M	Mar. 9, 1976
Class 242			
43R	B 521,600	M	Jan. 27, 1976
107.4A	B 487,427	M	Mar. 2, 1976
129.8	B 506,167	M	Feb. 10, 1976
Class 244			
3.27	B 510,521	M	Mar. 2, 1976
134R	B 535,928	M	Jan. 13, 1976
140	B 419,173	M	Mar. 9, 1976
169	B 423,441	M	Feb. 17, 1976
	B 511,346	M	Jan. 27, 1976
Class 248			
49	B 398,488	M	Feb. 24, 1976
73	B 494,806	M	Feb. 3, 1976
Class 249			
135	B 548,155	M	Jan. 13, 1976
Class 250			
210	B 515,908	E	Jan. 20, 1976
227	B 522,577	E	Jan. 27, 1976
	B 560,765	E	Feb. 3, 1976
231SE	B 503,618	E	Mar. 9, 1976
291	B 500,981	E	Jan. 27, 1976
364	B 526,190	E	Feb. 17, 1976
402	B 451,534	E	Jan. 13, 1976
445T	B 574,616	E	Mar. 2, 1976
577	B 507,396	E	Feb. 10, 1976
Class 251			
1B	B 541,710	M	Feb. 24, 1976
58	B 429,434	M	Feb. 17, 1976
129	B 534,333	M	Feb. 17, 1976
319	B 490,589	M	Feb. 3, 1976
Class 252			
12	B 559,142	C	Mar. 2, 1976
105	B 479,969	C	Mar. 9, 1976
156	B 520,546	C	Mar. 2, 1976
182	B 471,405	C	Feb. 10, 1976
301.1W	B 548,058	C	Feb. 17, 1976
301.4S	B 535,813	C	Jan. 27, 1976
364	B 370,309	C	Jan. 20, 1976
404	B 569,125	C	Feb. 24, 1976
408R	B 544,476	C	Feb. 24, 1976
429R	B 457,850	C	Feb. 10, 1976
432	B 509,640	C	Feb. 17, 1976
454	B 450,967	C	Jan. 13, 1976
500	B 479,242	C	Feb. 17, 1976
518	B 585,731	C	Feb. 3, 1976
543	B 403,766	C	Feb. 10, 1976
Class 254			
186R	B 511,407	M	Feb. 10, 1976
188	B 437,559	M	Feb. 3, 1976
190R	B 489,685	M	Feb. 24, 1976
Class 259			
4	B 486,614	N	Feb. 17, 1976
191	B 556,057	M	Jan. 13, 1976
Class 260			
2.5AC	B 497,194	C	Feb. 3, 1976
	B 537,102	C	Jan. 13, 1976
2.5AJ	B 557,856	C	Feb. 10, 1976
2.5AM	B 422,063	C	Feb. 3, 1976
2.5AR	B 483,606	C	Jan. 27, 1976
	B 502,589	C	Jan. 27, 1976
2.5AV	B 460,441	C	Jan. 13, 1976
2.5AW	B 483,762	C	Feb. 10, 1976
	B 486,828	C	Mar. 2, 1976
2.5B	B 554,380	C	Mar. 9, 1976
2.5R	B 471,579	C	Jan. 13, 1976
17R	B 510,998	C	Feb. 10, 1976
	B 519,487	C	Feb. 17, 1976
17.4ST	B 530,580	C	Mar. 2, 1976
18TN	B 528,303	C	Feb. 10, 1976
23H	B 54,859	C	Feb. 17, 1976
23XA	B 483,865	C	Jan. 13, 1976
28P	B 489,331	C	Feb. 17, 1976
28R	B 507,456	C	Mar. 9, 1976
28.5AS	B 501,540	C	Jan. 13, 1976
29.2EP	B 455,686	C	Mar. 2, 1976
	B 526,997	C	Jan. 13, 1976
29.2TN	B 414,266	C	Feb. 10, 1976
29.6N	B 494,440	C	Feb. 17, 1976
29.6TA	B 494,450	C	Feb. 17, 1976
30.4R	B 485,060	C	Feb. 17, 1976
32.6R	B 596,692	C	Feb. 17, 1976
33.6AQ	B 520,658	C	Mar. 9, 1976
	B 657,438	C	Jan. 20, 1976
33.6R	B 479,175	C	Feb. 17, 1976
33.8UA	B 497,780	C	Feb. 24, 1976
37EP	B 423,365	C	Feb. 17, 1976
	B 441,605	C	Feb. 3, 1976
37R	B 465,955	C	Feb. 3, 1976
42.15	B 415,122	C	Feb. 10, 1976
42.18	B 519,095	C	Feb. 24, 1976
45.75W	B 561,387	C	Feb. 10, 1976
45.8N	B 506,648	C	Feb. 3, 1976
45.85R	B 236,342	C	Feb. 10, 1976
46.5UA	B 528,962	C	Feb. 24, 1976
	B 528,966	C	Feb. 24, 1976
47EP	B 440,633	C	Feb. 10, 1976
63UY	B 470,576	C	Feb. 24, 1976
75N	B 521,125	C	Feb. 10, 1976
	B 521,126	C	Feb. 10, 1976
	B 521,127	C	Feb. 17, 1976
	B 521,128	C	Feb. 10, 1976
	B 552,489	C	Feb. 10, 1976
77.5AN	B 474,645	C	Mar. 2, 1976
77.5CR	B 306,668	C	Feb. 3, 1976
78.5R	B 437,209	C	Feb. 3, 1976
78S	B 451,308	C	Feb. 17, 1976
79.5P	B 546,149	C	Mar. 2, 1976
82.1	B 443,563	C	Feb. 24, 1976
88.2C	B 417,014	C	Jan. 13, 1976
88.2F	B 632,416	C	Mar. 9, 1976
93.5A	B 530,174	C	Feb. 24, 1976
112.5R	B 471,617	C	Feb. 10, 1976
	B 503,817	C	Jan. 13, 1976
	B 520,514	C	Mar. 9, 1976
140R	B 503,579	C	Feb. 10, 1976
143	B 419,582	C	Mar. 2, 1976
147	B 383,697	C	Feb. 17, 1976
210AB	B 554,291	C	Mar. 9, 1976
239A	B 349,370	C	Jan. 27, 1976
239D	B 520,256	C	Jan. 13, 1976
	B 536,935	C	Jan. 13, 1976
239B	B 470,900	C	Mar. 2, 1976
239D	B 487,423	C	Mar. 2, 1976
239.1	B 372,016	C	Mar. 9, 1976
	B 538,753	C	Feb. 10, 1976
	B 547,208	C	Feb. 24, 1976
239.3A	B 506,148	C	Feb. 3, 1976
240A	B 484,067	C	Feb. 17, 1976
240G	B 482,709	C	Feb. 24, 1976
243C	B 442,810	C	Feb. 24, 1976
	B 473,039	C	Feb. 10, 1976
	B 473,040	C	Feb. 10, 1976
	B 516,047	C	Feb. 10, 1976
	B 516,296	C	Feb. 3, 1976
	B 526,096	C	Feb. 3, 1976
244R	B 348,433	C	Feb. 3, 1976
247.7T	B 468,052	C	Feb. 10, 1976
248NS	B 537,711	C	Jan. 13, 1976
250BC	B 491,883	C	Feb. 3, 1976
251A	B 480,625	C	Feb. 24, 1976
256.4Q	B 503,345	C	Feb. 24, 1976
256.5R	B 531,096	C	Feb. 10, 1976
268BF	B 490,946	C	Feb. 17, 1976
268TR	B 539,374	C	Mar. 9, 1976
	B 563,070	C	Mar. 9, 1976
274SA	B 494,944	C	Feb. 17, 1976
285.5	B 530,318	C	Jan. 13, 1976
287C	B 492,039	C	Feb. 24, 1976
287D	B 571,638	C	Mar. 9, 1976
288R	B 402,162	C	Mar. 2, 1976
290R	B 445,493	C	Mar. 2, 1976
293.54	B 545,464	C	Feb. 10, 1976
293.56	B 447,000	C	Feb. 3, 1976
293.57	B 426,802	C	Feb. 17, 1976
294.8D	B 526,510	C	Jan. 20, 1976
294.8G	B 445,166	C	Mar. 2, 1976
295.5A	B 515,642	C	Feb. 24, 1976
	B 545,299	C	Feb. 24, 1976
295.5B	B 458,617	C	Feb. 3, 1976
296R	B 477,252	C	Jan. 13, 1976
306.7C	B 385,024	C	Feb. 10, 1976
307D	B 486,280	C	Feb. 3, 1976
307H	B 471,836	C	Feb. 24, 1976
	B 554,848	C	Feb. 24, 1976
308A	B 488,111	C	Jan. 13, 1976
308D	B 532,005	C	Feb. 24, 1976
309.2	B 522,567	C	Feb. 17, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
	B 542,158	C	Jan. 13, 1976
310R	B 535,437	C	Feb. 24, 1976
314.5	B 426,266	C	Mar. 2, 1976
326R	B 486,678	C	Mar. 2, 1976
	B 398,084	C	Feb. 3, 1976
326.5B	B 276,026	C	Feb. 3, 1976
326.5FN	B 484,269	C	Feb. 10, 1976
326.9	B 477,481	C	Feb. 3, 1976
326.12R	B 446,107	C	Mar. 9, 1976
326.13R	B 456,869	C	Mar. 9, 1976
327C	B 480,452	C	Feb. 10, 1976
330.5	B 552,498	C	Jan. 13, 1976
	B 574,996	C	Feb. 17, 1976
340.5	B 504,877	C	Feb. 24, 1976
340.9	B 476,372	C	Feb. 24, 1976
	B 521,643	C	Mar. 2, 1976
343.2R	B 491,032	C	Feb. 10, 1976
343.3	B 536,675	C	Jan. 20, 1976
343.3R	B 495,550	C	Feb. 3, 1976
	B 495,554	C	Feb. 3, 1976
345.9	B 450,708	C	Mar. 9, 1976
346.2M	B 440,858	C	Feb. 3, 1976
	B 302,160	C	Feb. 3, 1976
346.4	B 485,051	C	Feb. 17, 1976
348.5L	B 521,324	C	Jan. 27, 1976
348.6	B 546,295	C	Jan. 20, 1976
378	B 431,713	C	Feb. 10, 1976
397.4	B 450,693	C	Mar. 9, 1976
	B 484,068	C	Mar. 2, 1976
429.7	B 464,587	C	Feb. 3, 1976
429.9	B 455,481	C	Feb. 24, 1976
438.1	B 518,656	C	Feb. 17, 1976
448.2H	B 390,408	C	Feb. 3, 1976
448.2N	B 551,463	C	Feb. 17, 1976
456NS	B 484,419	C	Mar. 9, 1976
465.5R	B 747,785	C	Feb. 10, 1976
465.7	B 564,252	C	Mar. 2, 1976
465.9	B 456,900	C	Feb. 3, 1976
	B 530,925	C	Feb. 24, 1976
471R	B 385,483	C	Feb. 17, 1976
	B 388,521	C	Jan. 13, 1976
472	B 472,256	C	Jan. 13, 1976
	B 491,052	C	Mar. 2, 1976
473S	B 532,140	C	Mar. 2, 1976
483	B 410,074	C	Feb. 24, 1976
493	B 351,455	C	Feb. 24, 1976
501.12	B 544,899	C	Feb. 17, 1976
513R	B 494,669	C	Feb. 3, 1976
515A	B 390,031	C	Jan. 13, 1976
516	B 386,828	C	Feb. 3, 1976
527R	B 467,328	C	Mar. 9, 1976
534R	B 301,143	C	Jan. 27, 1976
544C	B 471,116	C	Feb. 17, 1976
553R	B 391,473	C	Mar. 2, 1976
554	B 529,974	C	Feb. 17, 1976
557R	B 386,257	C	Feb. 3, 1976
561R	B 513,781	C	Feb. 24, 1976
562B	B 413,379	C	Mar. 9, 1976
566A	B 513,014	C	Feb. 10, 1976
567.6M	B 480,114	C	Mar. 2, 1976
568	B 529,974	C	Feb. 17, 1976
578	B 449,837	C	Mar. 2, 1976
580	B 503,742	C	Feb. 17, 1976
586C	B 438,484	C	Feb. 17, 1976
593R	B 468,350	C	Jan. 13, 1976
598	B 465,202	C	Feb. 24, 1976
601R	B 208,916	C	Jan. 13, 1976
604HF	B 472,241	C	Feb. 17, 1976
609E	B 474,573	C	Jan. 20, 1976
621H	B 501,128	C	Feb. 24, 1976
621K	B 470,348	C	Jan. 13, 1976
632R	B 553,584	C	Feb. 17, 1976
637R	B 519,446	C	Feb. 24, 1976
643R	B 480,662	C	Mar. 2, 1976
647	B 394,248	C	Jan. 27, 1976
648F	B 330,736	C	Feb. 3, 1976
665R	B 460,846	C	Feb. 24, 1976
668D	B 430,157	C	Feb. 17, 1976
674SA	B 426,274	C	Jan. 20, 1976
683.15D	B 428,103	C	Feb. 10, 1976
683.48	B 526,027	C	Feb. 17, 1976
859R	B 519,485	C	Feb. 10, 1976
873	B 465,688	C	Jan. 27, 1976
	B 519,486	C	Feb. 17, 1976
876B	B 575,851	C	Feb. 10, 1976
876R	B 589,966	C	Feb. 17, 1976
	B 461,184	C	Feb. 17, 1976
	B 580,826	C	Feb. 17, 1976
	B 589,966	C	Feb. 17, 1976
880B	B 510,458	C	Feb. 10, 1976
884	B 456,579	C	Feb. 10, 1976
890	B 495,408	C	Feb. 3, 1976
927N	B 369,221	C	Feb. 24, 1976
929	B 502,993	C	Feb. 17, 1976
937	B 512,373	C	Feb. 10, 1976
940	B 496,430	C	Feb. 10, 1976
942	B 386,673	C	Feb. 3, 1976
948	B 534,591	C	Feb. 17, 1976
Class 261			
39A	B 562,462	C	Jan. 13, 1976
98	B 480,702	C	Jan. 27, 1976
Class 264			
36	B 308,659	C	Jan. 27, 1976
49	B 417,164	C	Mar. 2, 1976
51	B 506,144	C	Feb. 10, 1976
	B 508,369	C	Jan. 13, 1976
140	B 214,925	C	Mar. 9, 1976
161	B 555,437	C	Feb. 3, 1976
225	B 453,759	C	Jan. 27, 1976
Class 270			
62	B 516,609	M	Feb. 24, 1976
Class 271			
180	B 435,481	M	Mar. 9, 1976
Class 274			
37	B 526,388	M	Feb. 3, 1976
Class 277			
27	B 544,034	M	Feb. 17, 1976
81P	B 515,216	M	Feb. 17, 1976
184	B 426,819	M	Feb. 17, 1976
Class 280			
150.5	B 583,051	M	Feb. 3, 1976
236	B 572,642	M	Feb. 10, 1976
Class 290			
17	B 477,597	E	Feb. 17, 1976
Class 292			
254	B 549,964	M	Feb. 24, 1976
Class 293			
71P	B 552,932	M	Feb. 3, 1976
Class 296			
35R	B 443,647	M	Feb. 17, 1976
	B 463,671	M	Jan. 13, 1976
Class 298			
35M	B 510,588	M	Jan. 27, 1976
Class 299			
31	B 499,209	M	Feb. 24, 1976
Class 305			
27	B 506,566	M	Jan. 20, 1976
Class 307			
88.3	B 540,872	E	Jan. 20, 1976
137	B 466,444	E	Jan. 20, 1976
205	B 444,437	E	Mar. 9, 1976
	B 513,368	E	Feb. 3, 1976
232	B 540,078	E	Jan. 13, 1976
251	B 548,302	E	Feb. 17, 1976
255	B 492,688	E	Jan. 20, 1976
270	B 497,960	E	Jan. 20, 1976
293	B 519,932	E	Feb. 3, 1976
296	B 512,849	E	Feb. 3, 1976
Class 308			
9	B 391,797	M	Mar. 9, 1976
207R	B 507,661	M	Mar. 2, 1976
Class 310			
4R	B 539,746	E	Feb. 17, 1976
9.6	B 501,482	E	Jan. 13, 1976
41	B 561,784	E	Jan. 27, 1976
90	B 458,500	E	Feb. 24, 1976
155	B 592,143	C	Jan. 27, 1976
168	B 526,289	E	Feb. 24, 1976
254	B 521,045	E	Feb. 24, 1976
	B 521,046	E	Feb. 24, 1976
259	B 521,044	E	Feb. 24, 1976
Class 313			
42	B 534,443	E	Jan. 27, 1976
60	B 513,706	M	Jan. 13, 1976
99	B 518,859	E	Feb. 3, 1976
273	B 531,929	E	Jan. 20, 1976
330	B 504,056	C	Feb. 24, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
366	B 515,455	E	Jan. 27, 1976
404	B 523,696	E	Jan. 13, 1976
452	B 160,045	E	Jan. 13, 1976
477	B 279,969	E	Jan. 13, 1976
Class 315			
169TV	B 463,322	E	Jan. 20, 1976
241P	B 501,503	E	Mar. 2, 1976
371	B 483,615	E	Jan. 27, 1976
388	B 516,002	E	Jan. 13, 1976
399	B 467,971	E	Jan. 13, 1976
408	B 516,564	E	Feb. 17, 1976
Class 317			
9R	B 488,634	E	Jan. 20, 1976
36TD	B 504,404	E	Feb. 24, 1976
101A	B 420,472	E	Feb. 24, 1976
120	B 527,187	E	Feb. 17, 1976
124	B 509,606	E	Feb. 3, 1976
259	B 506,461	E	Jan. 20, 1976
Class 318			
139	B 475,236	E	Feb. 3, 1976
231	B 511,886	E	Feb. 3, 1976
257	B 502,973	E	Jan. 27, 1976
593	B 476,967	E	Mar. 9, 1976
Class 321			
2	B 533,734	E	Jan. 27, 1976
7	B 509,185	E	Feb. 3, 1976
61	B 495,759	E	Feb. 3, 1976
Class 322			
25	B 466,318	E	Mar. 9, 1976
Class 323			
1	B 430,276	E	Jan. 20, 1976
17	B 459,811	E	Jan. 20, 1976
	B 583,089	E	Jan. 27, 1976
22T	B 501,181	E	Feb. 10, 1976
Class 324			
13	B 79,099	E	Jan. 13, 1976
51	B 534,767	E	Feb. 3, 1976
60C	B 540,218	E	Feb. 10, 1976
62	B 465,393	E	Jan. 27, 1976
158R	B 483,268	E	Mar. 9, 1976
Class 325			
40	B 558,220	E	Jan. 27, 1976
468	B 544,961	E	Jan. 13, 1976
Class 328			
129	B 78,315	E	Feb. 10, 1976
155	B 550,693	E	Jan. 20, 1976
Class 330			
15	B 530,813	E	Feb. 17, 1976
33	B 439,542	E	Jan. 27, 1976
207P	B 553,460	E	Feb. 3, 1976
Class 331			
44ST	B 527,669	E	Jan. 13, 1976
51	B 538,686	E	Jan. 13, 1976
94.5C	B 549,931	E	Jan. 20, 1976
94.5L	B 506,916	E	Feb. 3, 1976
94.5M	B 384,654	E	Feb. 24, 1976
94.5P	B 394,350	E	Jan. 13, 1976
116R	B 527,693	E	Feb. 3, 1976
117R	B 571,219	E	Feb. 24, 1976
Class 332			
9R	B 507,087	E	Feb. 17, 1976
Class 333			
30R	B 453,616	E	Jan. 27, 1976
31A	B 568,770	E	Feb. 10, 1976
72	B 534,991	E	Jan. 27, 1976
73W	B 339,194	E	Feb. 3, 1976
Class 335			
7	B 509,165	E	Mar. 2, 1976
210	B 541,517	E	Jan. 13, 1976
253	B 515,452	E	Feb. 10, 1976
Class 338			
166	B 489,526	E	Feb. 3, 1976
202	B 528,761	E	Feb. 10, 1976
Class 340			
8L	B 270,274	E	Feb. 17, 1976
146.1AB	B 428,408	E	Mar. 2, 1976
167B	B 568,226	E	Feb. 24, 1976
172.5	B 461,336	E	Feb. 3, 1976
	B 482,907	E	Jan. 20, 1976
	B 485,575	E	Feb. 24, 1976
	B 533,454	E	Mar. 2, 1976
173FF	B 495,185	E	Mar. 9, 1976
173R	B 545,945	M	Jan. 27, 1976
174DC	B 443,712	E	Jan. 27, 1976
174TF	B 429,018	C	Feb. 10, 1976
	B 455,425	E	Feb. 3, 1976
	B 472,276	E	Mar. 9, 1976
	B 476,681	E	Jan. 13, 1976
	B 499,718	E	Jan. 27, 1976
198	B 546,665	E	Jan. 20, 1976
347AD	B 507,647	E	Jan. 27, 1976
	B 526,106	E	Jan. 27, 1976
347CC	B 458,500	E	Jan. 20, 1976
Class 343			
7A	B 248,240	E	Jan. 13, 1976
7.7	B 484,029	E	Feb. 10, 1976
8	B 497,702	E	Mar. 2, 1976
100LE	B 488,395	E	Jan. 27, 1976
100LE	B 496,502	E	Jan. 20, 1976
786	B 547,994	E	Jan. 20, 1976
815	B 563,244	E	Jan. 27, 1976
Class 346			
75	B 512,964	E	Feb. 10, 1976
Class 350			
96WG	B 381,985	M	Feb. 3, 1976
	B 537,722	M	Feb. 3, 1976
103	B 586,663	M	Feb. 3, 1976
160LC	B 527,054	M	Feb. 17, 1976
173	B 469,947	M	Jan. 20, 1976
310	B 520,543	M	Jan. 27, 1976
320	B 548,440	M	Feb. 3, 1976
Class 354			
23D	B 492,774	E	Mar. 9, 1976
46	B 515,135	E	Feb. 17, 1976
70	B 533,580	E	Feb. 3, 1976
156	B 507,131	E	Mar. 2, 1976
174	B 502,161	E	Mar. 2, 1976
288	B 559,111	E	Feb. 24, 1976
298	B 489,328	E	Jan. 20, 1976
Class 355			
8	B 509,474	M	Feb. 17, 1976
17	B 493,501	M	Feb. 3, 1976
Class 356			
103	B 517,504	M	Mar. 9, 1976
201	B 450,521	M	Feb. 17, 1976
Class 357			
16	B 496,487	E	Jan. 20, 1976
22	B 480,749	E	Mar. 9, 1976
	B 504,503	E	Mar. 9, 1976
23	B 516,060	E	Feb. 17, 1976
36	B 508,961	E	Feb. 3, 1976
65	B 470,798	E	Jan. 20, 1976
72	B 481,930	E	Feb. 24, 1976
Class 358			
8	B 554,939	E	Feb. 10, 1976
28	B 73,017	E	Mar. 9, 1976
41	B 502,289	E	Jan. 13, 1976
Class 360			
1	B 484,365	E	Jan. 27, 1976
15	B 283,941	E	Feb. 3, 1976
17	B 461,874	E	Jan. 27, 1976
27	B 427,883	E	Jan. 20, 1976
60	B 491,111	E	Feb. 17, 1976
78	B 487,411	E	Feb. 24, 1976
80	B 403,477	E	Feb. 3, 1976
81	B 500,176	E	Feb. 3, 1976
85	B 501,253	E	Feb. 3, 1976
102	B 458,964	E	Mar. 2, 1976
130	B 579,806	E	Feb. 3, 1976
Class 401			
219	B 557,621	M	Feb. 3, 1976
Class 403			
107	B 513,789	M	Feb. 3, 1976
318	B 540,632	M	Jan. 13, 1976
Class 404			
71	B 452,672	M	Jan. 13, 1976
77	B 434,206	M	Feb. 3, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
Class 408			
124	B 501,993	M	Jan. 13, 1976
146	B 521,986	M	Feb. 3, 1976
Class 415			
14	B 471,735	M	Feb. 3, 1976
115	B 561,712	C	Feb. 17, 1976
136	B 563,412	M	Feb. 24, 1976
213R	B 512,547	M	Jan. 13, 1976
214	B 552,006	M	Feb. 3, 1976
Class 416			
61	B 549,394	M	Jan. 27, 1976
157B	B 513,346	M	Mar. 9, 1976
Class 423			
15	B 372,722	C	Mar. 9, 1976
238	B 485,401	C	Jan. 27, 1976
242	B 66,272	C	Feb. 24, 1976
249	B 402,553	C	Feb. 17, 1976
283	B 521,984	C	Feb. 17, 1976
315	B 471,221	C	Jan. 13, 1976
390	B 549,198	C	Jan. 13, 1976
393	B 491,455	C	Feb. 3, 1976
448	B 414,028	C	Feb. 17, 1976
471	B 521,612	C	Mar. 9, 1976
580	B 379,177	C	Jan. 27, 1976
Class 424			
9	B 426,424	C	Feb. 3, 1976
45	B 181,208	C	Mar. 9, 1976
62	B 464,593	C	Mar. 9, 1976
115	B 482,660	C	Feb. 10, 1976
118	B 542,226	C	Feb. 24, 1976
122	B 482,058	C	Mar. 2, 1976
	B 524,179	C	Jan. 13, 1976
177	B 490,995	C	Feb. 3, 1976
203	B 576,903	C	Feb. 3, 1976
230	B 487,133	C	Jan. 27, 1976
245	B 493,955	C	Mar. 9, 1976
246	B 399,098	C	Feb. 24, 1976
257	B 374,588	C	Jan. 27, 1976
258	B 426,639	C	Feb. 3, 1976
263	B 466,929	C	Jan. 27, 1976
267	B 307,698	C	Feb. 3, 1976
	B 407,737	C	Feb. 3, 1976
270	B 521,711	C	Feb. 10, 1976
273	B 566,464	C	Feb. 3, 1976
274	B 496,431	C	Jan. 13, 1976
	B 547,547	C	Feb. 24, 1976
281	B 587,786	C	Feb. 17, 1976
311	B 457,862	C	Jan. 27, 1976
317	B 510,850	C	Feb. 3, 1976
362	B 495,489	C	Feb. 3, 1976
Class 425			
222	B 163,463	M	Jan. 27, 1976
384	B 562,813	C	Feb. 3, 1976
521	B 411,765	M	Feb. 24, 1976
	B 548,688	M	Mar. 9, 1976
Class 426			
3	B 583,712	C	Feb. 10, 1976
73	B 493,950	C	Mar. 2, 1976
239	B 572,726	C	Feb. 24, 1976
276	B 535,944	C	Jan. 13, 1976
535	B 560,717	C	Feb. 10, 1976
548	B 439,778	C	Feb. 3, 1976
Class 427			
39	B 476,837	C	Jan. 20, 1976
70	B 381,709	C	Jan. 13, 1976
145	B 457,547	C	Feb. 17, 1976
186	B 537,085	C	Feb. 17, 1976
207	B 501,415	C	Jan. 13, 1976
343	B 160,099	C	Jan. 13, 1976
372	B 409,848	C	Jan. 27, 1976
389	B 519,377	C	Jan. 27, 1976
Class 428			
73	B 481,737	C	Jan. 13, 1976
224	B 378,760	C	Mar. 9, 1976
289	B 402,929	C	Feb. 3, 1976
315	B 373,354	C	Jan. 27, 1976
341	B 450,196	C	Feb. 10, 1976
428	B 554,655	C	Feb. 24, 1976
434	B 457,886	C	Jan. 13, 1976
447	B 456,069	C	Mar. 9, 1976
515	B 474,747	C	Feb. 24, 1976
Class 431			
175	B 534,313	M	Jan. 27, 1976
264	B 398,220	M	Feb. 3, 1976
Class 432			
49	B 536,511	M	Mar. 9, 1976

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF MARCH, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Osakeyhtio: *See—*
Lauren, Unto Antero, 3,942,786.

A. B. Chance Company: *See—*
Hoyt, Robert M., 3,942,368.

A. Christiaens, Societe Anonyme: *See—*
Vanhoof, Pierre M.; and Clarebout, Pierre M., 3,943,172.

A-T-O Inc.: *See—*
Helterbrand, Arlen; and Logan, Zack H., 3,942,763.

A. Teichert & Son, Inc.: *See—*
Nelson, Edgar L.; and Espinola, James R., 3,942,646.

Abbott Laboratories: *See—*
Stein, Robert George; Crovetti, Aldo Joseph; and Couch, Terry Lee, 3,943,249.

Abe, Jinnosuke: *See—*
Morishita, Masataka; Inaba, Yoshihito; Fukushima, Mitsuru; Kobari, Sadami; Nagata, Akiho; and Abe, Jinnosuke, 3,943,063.

Abe, Takeaki; Horikawa, Masaharu; and Kurita, Jiro, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for preparing acrylate polymers. 3,943,190, Cl. 260-876.00R.

Abe, Yasuo: *See—*
Yamaguchi, Takashi; Abe, Yasuo; and Fujita, Yoshio, 3,943,239.

Abel, Patrice; Duverne, Pierre; Elziere, Jean-Bernard; and Reffye, Jerome Verchere de, to Electricite de France. Method and device for recording, in real time, non uniformly variable data with compression of data during periods of relatively slow variation thereof. 3,943,349, Cl. 235-154.000.

Abeta, Sadaharu: *See—*
Okaniwa, Tetuo; and Abeta, Sadaharu, 3,942,946.

Abildskov, Dale P.: *See—*
Ashton, Larry J.; Abildskov, Dale P.; and Yao, Samuel S., 3,943,020.

Abolins, Visvaldis: *See—*
Cooper, Glenn D.; and Abolins, Visvaldis, 3,943,191.

Achtstaetter, Gerhard, to ITT Industries Inc. Time switch circuit having a switch-back time delay. 3,943,385, Cl. 307-293.000.

Ackley, Kenneth E.; Eburn, William H., Jr.; and Lucas, Paul A., to Mobil Oil Corporation. Square bottomed bag folding apparatus. 3,942,416, Cl. 93-32.000.

Acorn Engineering Co.: *See—*
Morris, Earl L.; and Sally, Theodore J., 3,942,201.

Adachi, Norihiko: *See—*
Ichikawa, Atsushi; Adachi, Norihiko; Kawanabe, Masayoshi; Hisada, Yozi; and Kohzaki, Yuichi, 3,942,995.

Adams, Charles De Witt, to Du Pont de Nemours, E. I., and Company. Alkyl 4-[o-substituted aminophenyl]-3-thioallophanates. 3,943,163, Cl. 260-470.000.

Adams, Sally L.; Cook, Michael M.; and Martin, Fred David, to Calgon Corporation. Well cementing composition containing polymaleic anhydride and having improved flow properties. 3,943,083, Cl. 260-29.60S.

Adams, Thomas D. Military ribbon holder. 3,942,273, Cl. 40-1.500.

Adams & Westlake Company, The: *See—*
Ehret, Yale W.; and Frey, Robert A., 3,942,286.

Adamson, Fletcher D., to Russell Corporation. Thread cutter for winding machines and the like. 3,942,732, Cl. 242-19.000.

Addressograph Multigraph Corporation: *See—*
Datta, Pabitra, 3,942,988.
Hou, Shou Ling, 3,942,980.
Vanderheyden, Robert Louis Marie, 3,943,540.

Advanced Instrument Development, Inc.: *See—*
Schmutzer, Joel J.; Klusendorf, John I.; and Grichnik, James J., 3,943,356.

Advokat, Theodor, to United States of America, Army. Novel duo-material case for pyrotechnic flares. 3,942,442, Cl. 102-37.800.

Aeronca, Inc.: *See—*
Logadon, Hillard Glenn, 3,942,552.

Aeronutronic Ford Corporation: *See—*
Austefjord, Harald M., 3,943,279.

Afendykiw, Marko; Boyle, John M.; and Hendrix, Charles E., to United States of America, Navy. Dual base line interferometer antenna. 3,943,514, Cl. 343-16.00R.

Agawa, Hiroshi: *See—*
Tamai, Yasuo; Aonuma, Masashi; Nakamura, Matsuaki; Agawa Hiroshi; and Akashi, Goro, 3,943,012.

Agency of Industrial Science & Technology: *See—*
Kose, Saburo; and Kinoshita, Makoto, 3,943,396.
Takeyama, Hidehiko; and Yato, Tsutomu, 3,942,229.

AGFA-Gevaert Aktiengesellschaft: *See—*
Arnold, Gunther; Paal, Gabor; Wilhelm, Alfred; Halfar, Kurt; and Vollmer, Hans Peter, 3,942,996.
Heilmann, Max, 3,942,984.
Krekeler, Ulrich; and Schneller, Peter, 3,943,019.

AGFA-GEVAERT, N.V.: *See—*
Florens, Raymond Leopold, 3,942,986.
Pira, Camille Francois; and DeRoeck, Joseph Irma, 3,942,696.

Aglietti, Giancarlo: *See—*
Antonelli, Giambattista; Ferlazzo, Natale; and Aglietti, Giancarlo, 3,943,069.

Aihara, Toru; and Kimura, Koichi, to Caterpillar Mitsubishi Ltd. Electric loader with excessive unwind preventive means. 3,943,306, Cl. 191-12.20R.

Aisenberg, Sol; and Chang, Kuo Wei, to United States of America, Navy. Dual field excitation for a carbon dioxide laser. 3,943,465, Cl. 331-94.5 PE.

Aisin Seiki Kabushiki Kaisha: *See—*
Inada, Masami; and Kondo, Toshiyuki, 3,942,844.

Aizawa, Eishi: *See—*
Harigaya, Hiroshi; Kano, Toshio; and Aizawa, Eishi, 3,942,241.

Ajinomoto Co., Inc.: *See—*
Morinaga, Yasushi; Ishizaki, Ayaaki; and Otsuka, Shin-ichiro, 3,943,038.

Akademiet for de Tekniske Videnskaber, Svejsecentralen: *See—*
Northeved, Allan, 3,942,530.

Akashi, Goro: *See—*
Tamai, Yasuo; Aonuma, Masashi; Nakamura, Matsuaki; Agawa, Hiroshi; and Akashi, Goro, 3,943,012.

AKG Akustische u Kino-gerate Gesellschaft m.b.H.: *See—*
Piribauer, Herbert, 3,943,304.

Akiba, Yoshikazu: *See—*
Nakatomi, Shunsuke; Yamamura, Takemi; and Akiba, Yoshikazu, 3,943,186.

Akiyama, Taichiro. Compositions for preparing room temperature vulcanizing type silicone rubbers. 3,943,091, Cl. 260-37.0SB.

Akriche, Jean; and Molitor, Andre, to Honeywell Information Systems Inc. Apparatus for monitoring the operation of a data processing communication system. 3,943,348, Cl. 235-153.0AK.

Akwell Industries, Inc.: *See—*
Pugh, Bradley L., 3,942,193.

Albertini, Eugene J.; and Lagomarsino, Max, to Chronometrics, Inc. Automatic timekeeping and accounting unit. 3,943,526, Cl. 346-25.000.

Allegheny Ludlum Industries, Inc.: *See—*
Hartline, Albert G., III, 3,943,010.

Allen, Elmer Lawrence, Jr.: *See—*
Kawamoto, Hirohisa; and Allen, Elmer Lawrence, Jr., 3,943,469.

Allen & Hanburys Limited: *See—*
Ellis, Gwynn Pennant; Collins, Ian; Waters, David Martin; and Bays, David Edmund, 3,943,141.

Allen, Kenneth Roy; Kenny, John; and Spurrell, Roworth Adrian John. Device for terminating tachycardia. 3,942,534, Cl. 128-419.0PG.

Alley, Gerald Francis: *See—*
Barnett, Barry Roger Michael; Alley, Gerald Francis; and Saunders, Brian Arthur, 3,942,226.

Allied Chemical Corporation: *See—*
Berenbaum, Morris B.; Gilleo, Kenneth B.; and Evans, Francis E., 3,943,100.

Allis-Chalmers Corporation: *See—*
Keuper, John J.; and Wagner, Paul D., 3,943,392.

Alpine Valley Resort, Inc.: *See—*
Peck, Truman C., 3,942,452.

Alsten Company, The: *See—*
Witkoff, Robert S., 3,942,632.

Althausen, Ferdinand: *See—*
Schmitzer, Willi; Raffel, Reiner; Althausen, Ferdinand; and Proksa, Ferdinand, 3,942,925.

Altscher, Siegfried: *See—*
Kraft, Paul; and Altscher, Siegfried, 3,943,085.

Aluminum Company of America: *See—*
Ballain, Marlyn D.; and Hart, Leroy D., 3,943,064.

Amana Refrigeration, Inc.: *See—*
Pink, John J., 3,942,334.

Amano, Haruyuki: *See—*
Hayashida, Yoshihiro; and Amano, Haruyuki, 3,943,486.

Amblard, Jean-Claude, to Entreprise de Recherches et D'Activities Petrolieres Elf. Device for automatic analysis mass spectrometry. 3,943,363, Cl. 250-288.000.

Ambrose, Alan Douglas; and Muir, Samuel, to British Steel Corporation. Apparatus and method for the spectroscopic analysis of solid metal articles. 3,942,892, Cl. 356-86.000.

American Air Filter Company, Inc.: *See—*
Shuler, Bernard R., 3,942,964.

American Cyanamid Company: *See—*
Fogel, Arnold W.; and Mercurio, Anthony F., 3,943,242.

American Home Products Corporation: *See—*
Herbst, David R.; and Smith, Herchel, 3,943,148.

American Hospital Supply Corporation: *See—*
Rudtke, Helen T., 3,942,523.
Tringali, Richard C.; and Turko, Michael, 3,942,421.

Ameron, Inc.: *See—*
Wells, Frank M.; and Black, Gordon J., 3,942,936.

Amon, Anton; and Sedam, Jason K., to Coca-Cola Company, The. Process for water disinfection and carbonation. 3,943,261, Cl. 426-67.000.

AMP Incorporated: *See—*
Pottle, Arthur Richard, 3,943,487.

Andersen, Halvor L., to Harris Company, The. Lobster trap davit. 3,942,655, Cl. 214-15.00R.

Anderson, Donald R.: *See—*
Hoffmann, Karl H.; and Anderson, Donald R., 3,943,171.

Anderson, Fred E. Mailbox. 3,942,715, Cl. 232-17.000.

Anderson, Paul L.; and Brittain, Darryl A., to Sandoz, Inc. 4-Alkyl-4-naphthyl butenes. 3,943,257, Cl. 260-483.000.

Anderson, Ray H.; and Saari, Albert L., to General Mills, Inc. Cariostatic composition. 3,943,241, Cl. 424-54.000.

Anderson, Robert J., to Beckman Instruments, Inc. Densitometer for measuring the density of an optical element such as a film badge. 3,942,898, Cl. 356-202.000.

Ando, Noriyoshi; and Yamaguchi, Hiroaki, to Nippon Soken, Inc. Digital acceleration detecting system. 3,943,345, Cl. 235-151.320.

Ando, Shizuo: *See—*
Okamura, Akira; and Ando, Shizuo, 3,943,291.

Andress, Otto G.; Fischetti, Joseph W.; Renzi, Anthony J.; and Ryan, Francis D., to General Electric Co. Turbomachine seal. 3,942,804, Cl. 277-58.000.

Andrew Corporation: *See—*
Phillips, James P., 3,943,521.

Andrews, Donald Allen: *See—*
Roggenstein, Edwin O.; Andrews, Donald Allen; and Manthiram, Chockalingam, 3,942,369.

Andrus, Everett Howard. Gravity flow discrete article gas flow isolated thermal treatment device. 3,942,943, Cl. 432-121.000.

Angliker, Hans-Joerg: *See—*
Peter, Richard; and Angliker, Hans-Joerg, 3,943,120.

Anritsu Electric Co., Ltd.: *See—*
Hanzawa, Keiji; Takahashi, Yoshiyuki; Suga, Nobuyoshi; Kato, ojo; Handa, Makoto; Hayashi, Hiromichi; Taneya, Shinichi; and Sone, Toshimaro, 3,942,767.

Anthony, Roy, to Uniroyal, Inc. Cabinet drawer. 3,942,852, Cl. 312-294.000.

Antkowiak, Thomas Anthony: *See—*
Kyker, Gary Stephen; and Antkowiak, Thomas Anthony, 3,943,088.

Antonelli, Giambattista; Ferlazzo, Natale; and Aglietti, Giancarlo, to Societa' Italiana Resine S.I.R. S.p.A. Process for the production of silver-based catalysts suitable for the production of ethylene oxide. 3,943,069, Cl. 252-443.000.

Aoki, Katashi, to Nissei Plastics Industrial Co., Ltd. Injection blow molding method for producing double layered hollow article. 3,943,219, Cl. 264-97.000.

Aonuma, Masashi: *See—*
Tamai, Yasuo; Aonuma, Masashi; Nakamura, Matsuaki; Agawa, Hiroshi; and Akashi, Goro, 3,943,012.

Apstein, Maurice; Reggia, Frank; and Jones, Howard S., Jr., to United States of America, Army. Nose cone capacitively tuned wedge antenna. 3,943,520, Cl. 343-708.000.

Arai, Akihiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Safety mechanism in motor driven camera film take-up. 3,943,534, Cl. 354-173.000.

Arai, Minoru, to Iwatsu Electric Co., Ltd. Frequency conversion system. 3,943,460, Cl. 331-16.000.

Aristarkhov, Nikolai Nikolaevich; Efimov, Igor Alexandrovich; Zaitsev, Boris Ivanovich; Peters, Iskra Genrikhovna; Tymosh, Boris Severianovich; Filonov, Viktor Sergeevich; Sharov, Alexei Lavrentievich; Shildin, Alexei Ivanovich; Balashova, Galina Stepanovna; Bets, Nikolai Ivanovich; Skvortsov, Stanislav Alexandrovich; Yakovleva, Valentina Stepanovna; Zhuchkov, Ivan Ilich; Gorjunov, Vladimir Sergeevich; Petrov, Vladimir Alexeevich; Kevrolev, Vladimir Petrovich; Rybakov, Valery Nikolaevich; and Tverdovsky, Ninel Dmitrievich. Method of detecting stacks with leaky fuel elements in liquid-metal-cooled reactor and apparatus for effecting same. 3,943,365, Cl. 250-390.000.

Armour and Company: *See—*
Sato, Kunito; and Roberts, Leonard H., 3,943,263.

Armour Pharmaceutical Company: *See—*
Silverstein, Robert M., 3,943,245.

Arnold, Gunther; Paal, Gabor; Wilhelm, Alfred; Halfar, Kurt; and Vollmer, Hans Peter, to AGFA-Gevaert Aktiengesellschaft. Radiation sensitive recording material. 3,942,996, Cl. 106-176.000.

Aronson, Theodore F., to Eli Lilly and Company. Feeding and rectifying apparatus and method. 3,942,645, Cl. 209-104.000.

Arrigoni, Virgilio; Gaetani, Bruno; and Ghezzi, Pietro, to Snamprogetti S.p.A. Method and apparatus for measuring knocking in internal combustion engines. 3,942,359, Cl. 73-35.000.

Arthur D. Little, Inc.: *See—*
Haggerty, John S., 3,943,324.

Asada, Haruo: *See—*
Kidode, Masatsugu; and Asada, Haruo, 3,943,344.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Abe, Takeaki; Horikawa, Masaharu; and Kurita, Jiro, 3,943,190.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Arai, Akihiro, 3,943,534.
Shono, Tetsuji, 3,943,533.

Asano, Yoshio, to Fuji Photo Film Co., Ltd. Film casette. 3,943,535, Cl. 354-174.000.

Ashburner, Adi Kaikhushiroo, to Harper & Tunstall Limited. Microswitch operated web or sheet feeding apparatus. 3,943,311, Cl. 200-61.130.

Ashikawa, Mikio: *See—*
Yanazawa, Hiroshi; Hashimoto, Norikazu; Ashikawa, Mikio; and Douta, Kikuo, 3,942,982.

Ashland Oil, Inc.: *See—*
Kovach, Stephen M.; and Wilson, George D., 3,943,053.

Ashton, Larry J.; Abildskov, Dale P.; and Yao, Samuel S., to Fiber Science, Inc. Filament wound blade and method for manufacturing same. 3,943,020, Cl. 156-156.000.

Aspey, Wayne S.: *See—*
Taylor, Maurice J.; Northrup, Stephen D.; and Aspey, Wayne S., 3,943,315.

Associated Portland Cement Manufacturers Limited, The: *See—*
Murray, Ransom James; and Brown, Arthur William, 3,942,994.

Astilleros Espanoles, W.A.: *See—*
Ruiz-Fornells Gonzalez, Ramon; Perez Gomez, Gonzalo; and Vivanco Sanchez, Jesus, 3,942,372.

Atchisson, Maxwell G. Unitary firing pin and extractor. 3,942,277, Cl. 42-25.000.

Atchisson, Maxwell G. Firing mechanism for firearm apparatus. 3,942,410, Cl. 89-139.000.

Ateliers des Charmilles, S.A.: *See—*
Lehmann, Hans; Girardin, Roger; Morf, William; and Delpretti, Roger, 3,943,322.
Pfau, Jean; Rhyner, Heinz; and Balleys, Francois, 3,943,321.

Atlantic Richfield Company: *See—*
Case, Everett N., 3,943,232.

Atoiants, Vladimir Sergeevich; Protodiakonov, Igor Orestovich; and Romankov, Petr Grigorievich. Contact plate for mass-exchange apparatus. 3,942,951, Cl. 23-252.00R.

Atwood, John G., to Perkin-Elmer Corporation, The. Sample platter moisturizing system. 3,942,952, Cl. 23-259.000.

Audi NSU Auto Union Aktiengesellschaft: *See—*
Wieland, Werner, 3,942,917.

Auinger, Herbert; Bohm, Franz; Kuckuck, Helmut; and Voigt, Hans, to Siemens Aktiengesellschaft. Superconducting magnetic separator. 3,942,643, Cl. 209-81.00A.

Aultz, Thomas R.; and Kistner, Jerome L., to Mosler Safe Company, The. Depository for receiving, imprinting and storing deposited articles of variable thickness. 3,942,435, Cl. 101-44.000.

Austefjord, Harald M., to Aeronutronic Ford Corporation. Digital convergence of multiple image projectors. 3,943,279, Cl. 178-7.30D.

Australian Controls Industries Pty., Ltd.: *See—*
Turner, Norman Jack, 3,943,479.

Autochem Instrument AB: *See—*
de Leeuw, Jan, 3,942,916.

Automated Construction Industries, Inc.: *See—*
Bourdo, John Lorin, 3,942,779.

Avance Oil & Gas Company, Inc.: *See—*
Balderson, Vearle Spurlock, 3,943,484.

Avco Corporation: *See—*
Zeiders, Glenn W., Jr., 3,942,880.

Avitzur, Betzalel. Manufacture of hollow workpieces. 3,942,351, Cl. 72-271.000.

Awtrey, James D., to Texas Instruments Incorporated. Metal-insulator-semiconductor structure having means for canceling noise. 3,943,544, Cl. 357-24.000.

Aycock, David F., to General Electric Company. Separation of an isomeric mixture of acetoxy-aldehydes by catalytic decomposition of an aldehyde to acetic acid and methacrolein. 3,943,166, Cl. 260-499.000.

Baak, Nils Tryggve E. A., to Owens-Illinois, Inc. SiO_2-$AlPO_4$ Glass batch compositions. 3,942,991, Cl. 106-52.000.

Babcock, Clarence O., to United States of America, Interior. Flexible rock bolt. 3,942,329, Cl. 61-45.00B.

Bahder, George; Eager, George S., Jr.; and Silver, David A., to General Cable Corporation. Extruded solid dielectric high voltage cable resistant to electro-chemical trees. 3,943,271, Cl. 174-23.00R.

Bahoshy, Bernard J.; Klose, Robert E.; and Nordstrom, Harold A., to General Foods Corporation. Chewing gums of longer lasting sweetness and flavor. 3,943,258, Cl. 426-3.000.

Bailey, Arthur Raymond, to Ferrograph Company Limited. Stereo sound reproducing apparatus with noise reduction. 3,943,293, Cl. 179-15.0BT.

Bailey, Edward A.; Pertusio, Rene; and Hibbard, George A., to Joy Manufacturing Company. Bit coupling means. 3,942,838, Cl. 299-91.000.

Bakassian, Georges; Gay, Michel; and Lefort, Marcel, to Rhone-Poulenc Textile. Process for stabilising halogenated vinyl resins. 3,943,099, Cl. 260-45.75E.

Baker, Bernard; and Klein, Martin, to Energy Research Corporation. Method of making a fuel cell electrode. 3,943,006, Cl. 136-120.0FC.

Baker, Charles; Harkness, Benjamin F.; and Norris, Alfred W., to United States of America, Navy. High altitude friction igniter. 3,942,445, Cl. 102-70.00R.

Baker, George H., to United States of America, Army. High frequency optically coupled differential voltage probe with logarithmic response. 3,943,367, Cl. 250-551.000.

Baker, Richard H., to Steelcase Inc. Chair. 3,942,836, Cl. 297-445.000.

Bakker, Wate Thewis, to General Refractories Company. Production of periclase refractory utilizing alkyd resins. 3,943,216, Cl. 264-56.000.

Bakoledis, Andrew G. Chain saw filing guide. 3,942,255, Cl. 33-202.000.

Balashova, Galina Stepanovna: *See—*
Aristarkhov, Nikolai Nikolaevich; Efimov, Igor Alexandrovich;

Zaitsev, Boris Ivanovich; Peters, Iskra Genrikhovna; Tymosh, Boris Severianovich; Filonov, Viktor Sergeevich; Sharov, Alexei Lavrentievich; Shildin, Alexei Ivanovich; Balashova, Galina Stepanovna; Bets, Nikolai Ivanovich; Skvortsov, Stanislav Alexandrovich; Yakovleva, Valentina Stepanovna; Zhuchkov, Ivan Ilich; Gorjunov, Vladimir Sergeevich; Petrov, Vladimir Alexeevich; Kevrolev, Vladimir Petrovich; Rybakov, Valery Nikolaevich; and Tverdovsky, Ninel Dmitrievich, 3,943,365.

Balaz, Alexander, to Quaker Oats Company, The. Die and air nozzle. 3,942,921, Cl. 425-4.00C.

Balda-Werke: *See—*
Lange, Karl Heinz, 3,943,537.

Balderson, Vearle Spurlock, to Avance Oil & Gas Company, Inc. Method of attenuating unwanted seismic reflections in underwater seismic exploration. 3,943,484, Cl. 340-7.00R.

Baldwin, Lawrence W.; and Zerkowitz, Avinoam S., to Hughes Aircraft Company. Single rail missile launcher with shift register timing. 3,942,409, Cl. 89-1.814.

Ballain, Marlyn D.; and Hart, Leroy D., to Aluminum Company of America. High strength alumina-silica catalyst substrates having high surface area. 3,943,064, Cl. 252-455.00R.

Balleys, Francois: *See—*
Pfau, Jean; Rhyner, Heinz; and Balleys, Francois, 3,943,321.

Balon, Albert J. Pilot light harness for gas stove. 3,942,825, Cl. 285-132.000.

Balyasinsky, Valery Ottovich: *See—*
Tolstov, Jury Georgievich; Skorovarov, Vladimir Efremovich; Grinshtein, Boris Ilich; Stepanova, Valentina Gavrilovna; Bashkatov, Ivan Pavlovich; Vinitsky, Jury Danilovich; Balyasinsky, Valery Ottovich; Zhmurov, Valery Pavlovich; Natalkin, Alexandr Venediktovich; and Lazarev, Grigory Bentsionovich, 3,943,427.

Banque Pour L'Expansion Industrielle "Banexi": *See—*
Fusey, Pierre, 3,943,066.

Bantz, Robert L., to Goodyear Tire & Rubber Company, The. Tire bead. 3,942,574, Cl. 152-362.00R.

Barbay, Michael R., to General Electric Company. Protection for aluminum tubing during ultrasonic soldering. 3,942,705, Cl. 228-111.000.

Barber, Howard H.; and Hajduk, Thaddeus J., to Zenith Radio Corporation. Apparatus for testing a hermetic seal in a glass cathode ray tube. 3,943,438, Cl. 324-54.000.

Bardon Research and Development Limited: *See—*
Pickard, Bernard H., 3,943,325.

Barer, Sol J.; and Kostrzewski, Patti L. Guanido acids as fungicides. 3,943,253, Cl. 424-319.000.

Barking Brassware Co., Ltd.: *See—*
King, Victor Howard George, 3,942,760.

Barnes Engineering Company: *See—*
Spielberger, Seymour C.; and Savoca, Robert C., 3,942,891.

Barnett, Barry Roger Michael; Alley, Gerald Francis; and Saunders, Brian Arthur, to TRW Inc. Lens mounting clips. 3,942,226, Cl. 24-208.00A.

Barnett, Irvin; and Reimschussel, George Paul, to Johns-Manville Corporation. Method of producing fiber strand. 3,943,220, Cl. 264-103.000.

Barratt, Robert O.; Polcer, John; and Swift, Richard James, to Foster Wheeler Energy Corporation. Bayonet tube steam generator. 3,942,482, Cl. 122-32.000.

Barry Wright Corporation: *See—*
Cournoyer, Bernard T.; Wright, David M.; and O'Toole, Jerome M., 3,942,639.

Barth, Mathias Otto; and Magel, Inge. Driver protection in motor vehicles. 3,942,391, Cl. 74-552.000.

Barton, Paul, to International Standard Electric Corporation. Doppler ILS receiver with beat signal scan synchronization. 3,943,518, Cl. 343-108.00M.

BASF Aktiengesellschaft: *See—*
Fitterer, Horst; Woweries, Uwe; Loewenberg, Gustav; and Gaiser, Dieter, 3,942,744.
Naarmann, Herbert; and Penzien, Klaus, 3,943,195.
Raiff, Siegfried; and Lenz, Werner, 3,942,259.
Unbehaun, Olaf; Hampel, Uwe; Scholz, Norbert; Gassmann, Horst; Schneider, Walter; Hesser, Heinz; Herrmann, Walter; and Bechert, Bertold, 3,942,448.

Bashkatov, Ivan Pavlovich: *See—*
Tolstov, Jury Georgievich; Skorovarov, Vladimir Efremovich; Grinshtein, Boris Ilich; Stepanova, Valentina Gavrilovna; Bashkatov, Ivan Pavlovich; Vinitsky, Jury Danilovich; Balyasinsky, Valery Ottovich; Zhmurov, Valery Pavlovich; Natalkin, Alexandr Venediktovich; and Lazarev, Grigory Bentsionovich, 3,943,427.

Bates, Jack A. Carpet cleaning machine. 3,942,217, Cl. 15-321.000.

Bauer, Kurt: *See—*
Fleischer, Jurgen; Bauer, Kurt; and Hopp, Ruldolf, 3,943,181.

Bauman, Jack, to Dura-Hair International, Inc. Hairpiece anchor. 3,942,195, Cl. 3-1.000.

Baumann, Robert P.: *See—*
LoPresti, Arthur; and Baumann, Robert P., 3,943,209.

Baur, Eduard. Lost plastic pattern for casting. 3,942,583, Cl. 164-246.000.

Baxter Laboratories, Inc.: *See—*
Louderback, Allan L.; and Fontana, Anthony J., 3,943,364.
Regan, Bernard M., 3,943,256.

Bayer Aktiengesellschaft: *See—*
Bossert, Friedrich; Meyer, Horst; and Vater, Wulf, 3,943,140.
Dietrich, Werner; Wagner, Kuno; and Eifler, Willi, 3,943,158.
Grune, Horst; and Knipp, Ulrich, 3,943,215.
Margotte, Dieter; Lachmann, Burkhard; Vernaleken, Hugo; Rudolph, Hans; and Cohnen, Wolfgang, 3,943,094.
Quiring, Bernd; and Wagner, Kuno, 3,943,159.
Schroer, Walter; Reiff, Helmut; Dieterich, Dieter; and Berger, Karl, 3,943,252.
Wagner, Klaus; Eue, Ludwig; Schmidt, Robert R.; and Roos, Ernst, 3,943,180.

Bays, David Edmund: *See—*
Ellis, Gwynn Pennant; Collins, Ian; Waters, David Martin; and Bays, David Edmund, 3,943,141.

BBC Brown, Boveri & Company, Limited: *See—*
Jaecklin, Andre A.; Cornu, Josef; and Lietz, Manfred, 3,943,549.
Meylan, Pierre, 3,942,907.

Beach, Donald Bramston. Barrel type air diffuser. 3,942,419, Cl. 98-40.00A.

Beale, Julian Robert Anthony: *See—*
Shannon, John Martin; and Beale, Julian Robert Anthony, 3,943,552.

Bechert, Bertold: *See—*
Unbehaun, Olaf; Hampel, Uwe; Scholz, Norbert; Gassmann, Horst; Schneider, Walter; Hesser, Heinz; Herrmann, Walter; and Bechert, Bertold, 3,942,448.

Becker Flugfunwerk GmbH: *See—*
Fehrenbach, Karl Heinz; Holl, Ludwig; and Grunewald, Eberhard L., 3,943,308.

Becker, Reinhold; Hennecken, Manfred; and Zimmermann, Hans-Georg, to Hoechst Aktiengesellschaft. Unilaterally closed hollow stick of shirred sausage casing with an inner closure formed from the tubular casing itself. 3,942,569, Cl. 150-1.000.

Beckers, Hans; and Bonus, Horst, to Robert Bosch GmbH. Tear-open packaging container. 3,942,676, Cl. 220-270.000.

Beckman Instruments, Inc.: *See—*
Anderson, Robert J., 3,942,898.
Jacobson, Kenneth E.; and Thomas, Gary C., 3,942,716.
Way, Allan S., 3,942,893.

Becton, Dickinson & Company: *See—*
Gandi, Robert A.; Martino, Anthony P.; and Pellegrino, Robert G., 3,942,634.

Behrendt, Armin: *See—*
Hoff, Gunter; and Behrendt, Armin, 3,942,531.

Bell, Anthony J., to Goodyear Tire & Rubber Company, The. Method for preparing high cis polyalkenamers. 3,943,116, Cl. 260-93.100.

Bell, David B. Paper felt and process for making the same. 3,943,269, Cl. 427-302.000.

Bell & Howell Company: *See—*
Boyle, Robert A., 3,942,788.
Fleischman, Andor A., 3,942,877.

Bell & Howell Japan, Ltd.: *See—*
Saito, Fumio, 3,942,882.

Bell, Raymond William Henry: *See—*
Fishbein, John; Bell, Raymond William Henry; Clarke, Anthony James; and Merriman, Peter, 3,943,075.

Bell, Reuben H.; and Foley, Kevin M., to Owens-Corning Fiberglas Corporation. Flame retardants for plastic foams. 3,943,076, Cl. 260-2.5AJ.

Bell, Reuben H.; Boardway, Russell M., Jr.; Thomson, Francis D.; and Wysocki, Donald C., to Owens-Corning Fiberglas Corporation. Fire retardant polyurethane foams. 3,943,077, Cl. 260-2.5AJ.

Bell Telephone Laboratories Incorporated: *See—*
Cox, Donald Clyde; and Reudink, Douglas Otto John, 3,943,468.
Cruzan, Paul David; and Tisone, Thomas Charles, 3,943,047.
Feldman, Martin; and Moran, Joseph Michael, 3,943,529.
O'Neill, John Francis, 3,943,296.

Beloit Corporation: *See—*
Langdon, Roy A., 3,942,723.
Sokolow, Nickolas N., 3,942,774.

Belouet, Christian; and Bunel, Jacques Charles Louis, to U.S. Philips Corporation. Device for stirring a liquid. 3,942,770, Cl. 259-95.000.

Ben-Dov, Oded, to RCA Corporation. Circularly polarized antenna system using a combination of turnstile and vertical dipole radiators. 3,943,522, Cl. 343-797.000.

Bendix Corporation, The: *See—*
Burnett, Richard T., 3,942,611.
Orme, Myrl E., 3,942,550.
Smith, Gerald C.; Ellingson, Dennis L.; Johnson, Colin A.; and Rhee, Seong K., 3,943,323.

Benmax, Peter David. Buttoning means. 3,942,224, Cl. 24-90.00B.

Bennett, Robert R., to Westinghouse Electric Corporation. Blowdown arrangement. 3,942,481, Cl. 122-32.000.

Benson: *See—*
Mourier, Jean, 3,943,530.

Benz, Gottlieb: *See—*
Matzinger, August; and Benz, Gottlieb, 3,942,298.

Berardinelli, Frank M.: *See—*
Stackman, Robert W.; and Berardinelli, Frank M., 3,943,199.

Berberich, Norbert J., Jr.: *See—*
Cook, Elton S.; and Berberich, Norbert J., Jr., 3,943,244.

Berenbaum, Morris B.; Gilleo, Kenneth B.; and Evans, Francis E., to Allied Chemical Corporation. Nylon flame retardants based on certain organic acids. 3,943,100, Cl. 260-45.85T.

Berger, Karl: *See—*
Schroer, Walter; Reiff, Helmut; Dieterich, Dieter; and Berger, Karl, 3,943,252.

Berges, David Alan, to SmithKline Corporation. 7-Amino-3-(1,3,4-thiadiazolinylthio-methyl) cephalosporins. 3,943,129, Cl. 260-243.00C.

Beriger, Ernst; Boger, Manfred; Drabek, Jozef; and Kristiansen, Odd, to Ciba-Geigy Corporation. O-methyl/ethyl-s-propyl/butyl-o-phenyl thiophosphates and dithiophosphates having an ether group or the phenyl ring. 3,943,202, Cl. 260-950.000.

Bernath, John, to Du-Kote Corporation. Method of treating and producing improved ammunition. 3,942,408, Cl. 86-19.000.

Bernstein, Joel L.; and Kovach, Paul E., to Grumman Aerospace Corporation. Fire hose nozzle coupler switch. 3,943,312, Cl. 200-61.58R.

Bertolacini, Ralph J.; and Kim, Dae K. Serial reforming with zirconium-promoted catalysts. 3,943,050, Cl. 208-65.000.

Berzin, Albert Yazepovich; Buslovich, Solomon Leibovich; Bush, Gunar Yanovich; Gershanov, Gennady Khaimovich; Zhagars, Aivar Alfredovich; Kalognomos, Viktor Ivanovich; Sokolov, Georgy Kondratievich; Chervinsky, Jury Konstantinovich; and Yakovich, Zigmund Yazepovich. Automatic information system for the organization of gymnastic competitions. 3,943,505, Cl. 340-323.00R.

Besenmatter, Walter; Muszumanski, Trude; and Kurz, Gunter, to Vockenhuber, Karl; and Hauser, Raimund, part interest to each. Pancratic wide-angle objective. 3,942,874, Cl. 350-184.000.

Betensky, Ellis I., to Ponder & Best, Inc. Wide aperture long focal length lens. 3,942,875, Cl. 350-214.000.

Betensky, Ellis I., to Ponder & Best, Inc. Telephoto lens. 3,942,876, Cl. 350-215.000.

Bets, Nikolai Ivanovich: *See—*
Aristarkhov, Nikolai Nikolaevich; Efimov, Igor Alexandrovich; Zaitsev, Boris Ivanovich; Peters, Iskra Genrikhovna; Tymosh, Boris Severianovich; Filonov, Viktor Sergeevich; Sharov, Alexei Lavrentievich; Shildin, Alexei Ivanovich; Balashova, Galina Stepanovna; Bets, Nikolai Ivanovich; Skvortsov, Stanislav Alexandrovich; Yakovleva, Valentina Stepanovna; Zhuchkov, Ivan Ilich; Gorjunov, Vladimir Sergeevich; Petrov, Vladimir Alexeevich; Kevrolev, Vladimir Petrovich; Rybakov, Valery Nikolaevich; and Tverdovsky, Ninel Dmitrievich, 3,943,365.

Bettini, Giuseppe; and Romano, Carlo, to Ing. C. Olivetti & C., S.p.A. Cassette tape transport with adjustable head. 3,943,569, Cl. 360-109.000.

Beutler, Robert Russel, to Motorola, Inc. CMOS synchronous binary counter. 3,943,378, Cl. 307-224.00C.

Beversdorf, Elmer J. Protective fencing. 3,942,764, Cl. 256-24.000.

Biddlecomb, Ralph W., to Westinghouse Electric Corporation. System for optically detecting moving targets. 3,943,561, Cl. 358-81.000.

Bienhoff, Milton G.: *See—*
Koerner, Ralph J.; Bienhoff, Milton G.; Henderson, Martin C.; Higbee, John E.; and Koerner, Steve J., 3,943,339.

Bigras, Jean: *See—*
Ratte, Jacques; and Bigras, Jean, 3,943,208.

Billington, Richard W.; and Drewett, Robin, to Wilkinson Sword Limited. Apparatus for or selective dissolution or detection of predetermined metals. 3,943,043, Cl. 204-146.000.

Bindra, Jasjit S.: *See—*
Corey, Elias J.; Bindra, Jasjit S.; and Schaaf, Thomas K., 3,943,151.

Bingham, Chalice, to Sealectro Corporation. Right angle connector. 3,943,470, Cl. 333-97.00R.

Binion, Travis W. Slipform with adjustable hopper and trowel means. 3,942,923, Cl. 425-64.000.

Binks, Chester J.; and Kroll, Steve, to Restaurant Technology, Inc. Heated sanitary sandwich bin with air curtains. 3,942,426, Cl. 99-473.000.

Bio-Medical Sciences, Inc.: *See—*
Witonsky, Robert J., 3,942,467.

Biospherics Incorporated: *See—*
Topol, George J., 3,942,792.

Bison-werke Bahre & Greten GmbH & Co. KG: *See—*
De Mets, Albert, 3,942,927.
De Mets, Albert, 3,942,929.

Black, Gordon J.: *See—*
Wells, Frank M.; and Black, Gordon J., 3,942,936.

Black III, Charles E., to Indak Manufacturing Corporation. Safety system for lawn mowers or other vehicles. 3,942,604, Cl. 180-103.00R.

Black, Stanley A.; and Jenkins, James F., to United States of America, Navy. Sandwiched structure for production of heat and hydrogen gas. 3,942,511, Cl. 126-248.000.

Bladen, Thomas H., to United States of America, Navy. Analog feedback amplifier employing a four-quadrant integrated circuit multiplier as the active control element. 3,943,455, Cl. 328-155.000.

Blanchard, William B.: *See—*
Ryan, Charles W.; and Blanchard, William B., 3,943,126.

Bliss & Laughlin Industries Incorporated: *See—*
Frank, Edward J.; and Freeman, John M., 3,942,608.

Blom, Gerald E.; and Van Leuven, Robert W. Protective match book holder. 3,942,633, Cl. 206-107.000.

Blomberg, Folke Ivar. Heater, especially for motor-cars. 3,942,719, Cl. 237-12.30C.

Blomgren, Oscar C., Jr.: *See—*
Blomgren, Oscar C., Sr.; and Blomgren, Oscar C., Jr., 3,942,575.

Blomgren, Oscar C., Sr.; and Blomgren, Oscar C., Jr., to Tuxco Corporation. Portable tire changing apparatus and method for mounting and demounting heavy duty tires on a wheel. 3,942,575, Cl. 157-1.260.

Blomquist, James E., to Victor Comptometer Corporation. Document stop and position indicator mechanism. 3,942,622, Cl. 197-127.00R.

Bloom, Max M. End closing machine for roll wrapped packages. 3,942,302, Cl. 53-138.00R.

Boa AG Luzern: *See—*
Dreyer, Marco, 3,942,702.

Board of Regents for the Oklahoma Agricultural and Mechanical Colleges Acting for and on behalf of Oklahoma State University Agriculture & Applied Science, The: *See—*
Hair, Jakie A.; and Randolph, Thomas C., 3,942,480.

Boardway, Russell M., Jr.: *See—*
Bell, Reuben H.; Boardway, Russell M., Jr.; Thomson, Francis D.; and Wysocki, Donald C., 3,943,077.

Bochman, Harry L., Jr.; and Wing, George S., to Hi-Shear Corporation, a part interest. Mechanism for securing a nut against loosening. 3,942,570, Cl. 151-8.000.

Bock, Rolf. Bicycle suspension. 3,942,821, Cl. 280-277.000.

Boeing Company, The: *See—*
Drummond, James E.; Chang, David B.; and Mahaffey, Derek W., 3,942,975.

Boger, Manfred: *See—*
Beriger, Ernst; Boger, Manfred; Drabek, Jozef; and Kristiansen, Odd, 3,943,202.

Bohm, Franz: *See—*
Auinger, Herbert; Bohm, Franz; Kuckuck, Helmut; and Voigt, Hans, 3,942,643.

Bohner, Beat: *See—*
Meyer, Willy; Bohner, Beat; and Dawes, Dag, 3,943,144.

Bohnert, Thomas J.: *See—*
Dunbar, Joseph E.; and Bohnert, Thomas J., 3,943,176.

Bokelman, Raymond Frank. Rotating cylinder wheel and ball-piston wheel motor, generator, and pump assembly. 3,942,913, Cl. 417-273.000.

Bolasny, Robert E., to Scientific Enterprises, Inc. Method and apparatus for producing increased quantities of ions and higher energy ions. 3,943,407, Cl. 317-4.000.

Boliden Aktiebolag: *See—*
Fahlstrom, Per Anders Herman Henningsson; and Jonsson, Erik Alfon, 3,942,727.

Bolza-Schunemann, Hans Bernhard, to Koenig & Bauer Aktiengesellschaft. Sheet feeding apparatus for printing presses. 3,942,787, Cl. 271-237.000.

Bom, Cornelis Johannes Gerardus: *See—*
van der Lely, Ary; and Bom, Cornelis Johannes Gerardus, 3,942,267.

Bonnaure, Edouard, to Creusot-Loire Entreprises. Installation for agglomeration of minerals on a continuous circular grate. 3,942,658, Cl. 214-18.00R.

Bonus, Horst: *See—*
Beckers, Hans; and Bonus, Horst, 3,942,676.

Boothe, Jerry Emile: *See—*
Martin, Fred David; and Boothe, Jerry Emile, 3,943,060.

Borden, George Wayne; and Carder, Charles Hobert, to Union Carbide Corporation. Radiation curable compositions of vinyl acetate polymers. 3,943,103, Cl. 260-47.0UA.

Bordons Elorza, Carlos. Overhead transportation system. 3,942,450, Cl. 104-121.000.

Borg-Warner Corporation: *See—*
Minard, James R., 3,942,850.
Schwary, Robert E.; and Shurger, Joseph A., 3,942,413.

Bory, Jacques, to Gatrun Anstalt. Packaging method. 3,942,299, Cl. 53-21.00R.

Bose, Ajay K., to Koninklijke Nederlandsche Gist-En Spiritusfabriek N.V. Novel beta-lactams and novel process. 3,943,123, Cl. 260-239.00A.

Bossert, Friedrich; Meyer, Horst; and Vater, Wulf, to Bayer Aktiengesellschaft. 2,3,5,6-Tetracarboxy-1,4-dihydropyridine derivatives. 3,943,140, Cl. 260-295.50R.

Bost, Pierre-Etienne; Costantini, Michel; Jouffret, Michel; and Lartigau, Guy, to Rhone-Poulenc Textile. Hydroxylation of aromatic compounds. 3,943,179, Cl. 260-621.00G.

Boucher, Harry, to Gardner-Denver Company. Cable guide means for a cable drum. 3,942,742, Cl. 242-157.00R.

Boucher, Robert J.; and Brackney, Robert L., Jr., to Hughes Aircraft Company. Electronic roll compensation system for a radar antenna. 3,943,508, Cl. 343-5.00R.

Boughton, Stephen G.: *See—*
Grimm, Bernard J.; and Boughton, Stephen G., 3,942,853.

Bouix, Maurice G. Vehicle adapted to be advanced in a fluid. 3,942,465, Cl. 115-28.00A.

Bourdo, John Lorin, to Automated Construction Industries, Inc. Clamping assembly. 3,942,779, Cl. 269-41.000.

Bourne, David W. A.: *See—*
Higuchi, Takeru; Repta, Arnold J.; and Bourne, David W. A., 3,943,137.

Bourrie, Georges E.; and Lensel, Robert M., to R. Alkan & Cie. Electromechanical device cum manual control of safety outfit boxes on aircrafts. 3,942,828, Cl. 292-201.000.

Bous, Karl. Treatment of textile fibre products. 3,942,315, Cl. 57-164.000.

Bowen, Robert F., to Raytheon Company. Frankfurt searing tray for use with microwave energy. 3,943,320, Cl. 219-10.55E.

Bowen, Ronald S. Football practice blocking and tackling reaction machine. 3,942,796, Cl. 273-55.00R.

Bowles, Leslie Reginald; and Heath-Coleman, Roy Albert, to Dracard Limited. Electrodes. 3,942,517, Cl. 128-2.10E.

Bown, Delos Edward; and Graves, James Marriott, to Polychrome Corporation. Vertical plate processor. 3,943,539, Cl. 354-302.000.

Boyle, John M.: *See—*
Afendykiw, Marko; Boyle, John M.; and Hendrix, Charles E., 3,943,514.

Boyle, Robert A., to Bell & Howell Company. Sheet material transport equipment. 3,942,788, Cl. 271-250.000.

Brackney, Robert L., Jr.: *See—*
Boucher, Robert J.; and Brackney, Robert L., Jr., 3,943,508.

Brady, Donnie G.; Deck, Harold R.; Jones, Faber B.; and Underwood, John H., to Phillips Petroleum Company. Poly(ether esters) of phthalic acid salts and di(halomethyl) ether. 3,943,164, Cl. 260-475.00P.

Brady, Robert T.: *See—*
McInerney, Michael J.; and Brady, Robert T., 3,942,355.

Brannin, Jafie R. Agricultural implement. 3,942,591, Cl. 172-371.000.

Branscombe, Richard Alan; and Caputi, Arthur, Jr., to E. & J. Gallo Winery. On-line carbon dioxide analyzer and analyzing method. 3,942,356, Cl. 73-19.000.

Brauer, Hans; and Duepper, Paul, to Kocks, Friedrich. Rolling mill train for the production of wire. 3,942,350, Cl. 72-228.000.

Braun, Gunther: *See—*
Dany, Franz-Josef; Wortmann, Joachim; Munch, Peter; and Braun, Gunther, 3,943,194.

Braun, Robert E.: *See—*
Klein, Peter P.; and Braun, Robert E., 3,942,854.

Brehm, Otto: *See—*
Dickopp, Gerhard; Potter, Manfred; and Brehm, Otto, 3,943,274.

Breitenstein, Charles T.; and Nicolaus, Frank G., to Spiral Step Tool Company. Hopper payout for various coin denominations. 3,942,544, Cl. 133-4.00R.

Brennan, Michael E.; and Yeakey, Ernest Leon, to Jefferson Chemical Co., Inc. Cyanoethylation of aromatic amines. 3,943,162, Cl. 260-465.00E.

Breuer, Hermann: *See—*
Treuner, Uwe D.; and Breuer, Hermann, 3,943,130.

Brewster, Arthur Edward; Weir, Donald Adams; Watson, Christopher Alan; George, Roger Geoffrey; and Phillips, Michael James, to Standard Telephone and Cables Limited. Electrical control systems. 3,943,489, Cl. 340-147.0SY.

Bridgestone Liquefied Gas Company, Ltd.: *See—*
Sato, Toru, 3,942,459.

Brienza, Michael J.; and Weindling, Frederik, to United Technologies Corporation. Modulator for electrical signals processed in a laser-acoustic delay line. 3,943,464, Cl. 332-7.510.

Bright, Thomas F.: *See—*
Kulka, Robert A.; Bright, Thomas F.; Bruno, Thomas P.; and Huffsmith, Charles S., 3,943,501.

British Ceca Company Limited, The: *See—*
Girard, Maurice Victor, 3,942,960.

British Gas Corporation: *See—*
Stroud, Henry John Francis, 3,942,957.
Thompson, Brian Hoyle; and Conway, Henry Lawrence, 3,942,958.

British Railways Board: *See—*
Enever, James A., 3,943,090.

British Steel Corporation: *See—*
Ambrose, Alan Douglas; and Muir, Samuel, 3,942,892.

British Titan Limited: *See—*
Hinley, John James; and Porter, David Malcolm, 3,942,999.

Brittain, Darryl A.: *See—*
Anderson, Paul L.; and Brittain, Darryl A., 3,943,257.

Brock, George W.; Kollar, Ernest P.; and Nettles, Michael L., to International Business Machines Corporation. Dynamic skew correction for rotating head magnetic recorder. 3,943,566, Cl. 360-71.000.

Brocks, Gunnar: *See—*
Kroyer, Karl Kristian Kobs; Fredsted, Tage; and Brocks, Gunnar, 3,942,966.

Broling, Keith W., to Portec, Inc. Adjustable compression unit and lading band anchor. 3,942,454, Cl. 105-472.000.

Brook, John W., to Claremont Polychemical Corporation. Stabilizers for polyvinyl chloride. 3,943,081, Cl. 260-23.0XA.

Brooking, Ivor Harold: *See—*
Keenan, John Gregory; Chilman, John Alfred; and Brooking, Ivor Harold, 3,942,911.

Brown, Arthur William: *See—*
Murray, Ransom James; and Brown, Arthur William, 3,942,994.

Brown, Charles A.: *See—*
Kokjohn, Leonard D.; Seeley, Wayne R.; Brown, Charles A.; and King, Reynold C., 3,943,333.

Brown, Glenn M.: *See—*
Swis, Philip E.; and Brown, Glenn M., 3,942,363.

Brown, Neil F.: *See—*
Krier, Keith N.; Brown, Neil F.; and Waldhauser, Steven J. A., 3,942,218.

Brown, William G.; and Paxton, Lee C. Ultrasonic pressure test method and apparatus. 3,942,381, Cl. 73-398.00R.

Brown, William H. Galvanizing continuous elements with prevention of corrosion of the pan. 3,942,471, Cl. 118-420.000.

Brown, William Keith, to Square D Company. Monitor assembly for ground fault interrupter. 3,943,409, Cl. 317-18.00R.

Brownlee, George Hunnam: *See—*
Osborn, Leroy Gordon; and Brownlee, George Hunnam, 3,942,883.

Brumm, Richard S.; and Parola, Gary D., to Grove Valve and Regulator Company. Expansible tube valve. 3,942,756, Cl. 251-5.000.

Bruno, Thomas P.: *See—*
Kulka, Robert A.; Bright, Thomas F.; Bruno, Thomas P.; and Huffsmith, Charles S., 3,943,501.

Bruns, Lester E.: *See—*
Martin, Earl C.; and Bruns, Lester E., 3,943,204.

Brunswick Corporation: *See—*
Meyer, James A., 3,942,489.

Bryer, Denis William, to National Research Development Corporation. Bubble generating devices. 3,942,371, Cl. 73-147.000.

Buccicone, Velio S., to Bucciconi Engineering Co., Inc. Dual sheet piling machine. 3,942,784, Cl. 271-64.000.

Bucciconi Engineering Co., Inc.: *See—*
Buccicone, Velio S., 3,942,784.

Buchanan, Donald George, to Dresser Europe S.A. Seven-segment display arrangement and liquid fuel dispensing pump embodying the same. 3,943,500, Cl. 340-253.00R.

Buchholz, Peter: *See—*
Schwanz, Wilfried; Fiala, Ernst; Warnecke, Rolf; and Buchholz, Peter, 3,942,819.

Buckman, Thomas P.; and Vorwick, Dean. Tubing clamp. 3,942,228, Cl. 24-255.0SL.

Budelman, Gerald A.: *See—*
Gravereaux, Daniel W.; and Budelman, Gerald A., 3,943,287.

Buhler, Max A., to Weelpal, A.G. Mobile storage and transport unit for use in a shelf storage system. 3,942,814, Cl. 280-79.100.

Bui-Hai, Nhu, to Thomson-CSF. Multiplexer-demultiplexer for a microwave antenna. 3,943,519, Cl. 343-176.000.

Bulloch, Carl Gordon, Jr. Apparatus for fabricating foam pads. 3,942,926, Cl. 425-126.00R.

Bulova Watch Company, Inc.: *See—*
Van Haaften, Egbert, 3,942,316.

Bundy, Patrick L.; and Harrison, Ross R., to Michigan Carton Company. Carton having hinged hooded cover. 3,942,712, Cl. 229-51.0TC.

Bunel, Jacques Charles Louis: *See—*
Belouet, Christian; and Bunel, Jacques Charles Louis, 3,942,770.

Bunger, Mills E. Automatic canal gate. 3,942,328, Cl. 61-25.000.

Bunker, Homer S. Engine efficiency indicator. 3,942,364, Cl. 73-115.000.

Bunyan, Thomas Walter, to Pilgrim Engineering Developments Limited. Stern gear of ships. 3,942,466, Cl. 115-34.00R.

Burkhart, Merle K.: *See—*
Case, Cecil L.; Fell, Ferol S.; and Burkhart, Merle K., 3,942,602.

Burmeister, Karl-Heinz, to Ipsen Industries International Gesellschaft mit beschrankter Haftung. Cradle hearth oven. 3,942,659, Cl. 214-18.00R.

Burnett, Richard T., to Bendix Corporation, The. Disc brake and mounting structure therefor. 3,942,611, Cl. 188-73.300.

Burnside, Ernest. Anti-theft removable ignition coil installations. 3,942,605, Cl. 180-114.000.

Burroughs Corporation: *See—*
Klein, Peter P.; and Braun, Robert E., 3,942,854.
Nelson, Robert D., 3,943,284.
Roggenstein, Edwin O.; Andrews, Donald Allen; and Manthiram, Chockalingam, 3,942,369.

Busak & Luyken KG., Firma: *See—*
Edlund, Roy, 3,942,806.

Bush, Gunar Yanovich: *See—*
Berzin, Albert Yazepovich; Buslovich, Solomon Leibovich; Bush, Gunar Yanovich; Gershanov, Gennady Khaimovich; Zhagars, Aivar Alfredovich; Kalognomos, Viktor Ivanovich; Sokolov, Georgy Kondratievich; Chervinsky, Jury Konstantinovich; and Yakovich, Zigmund Yazepovich, 3,943,505.

Buslovich, Solomon Leibovich: *See—*
Berzin, Albert Yazepovich; Buslovich, Solomon Leibovich; Bush, Gunar Yanovich; Gershanov, Gennady Khaimovich; Zhagars, Aivar Alfredovich; Kalognomos, Viktor Ivanovich; Sokolov, Georgy Kondratievich; Chervinsky, Jury Konstantinovich; and Yakovich, Zigmund Yazepovich, 3,943,505.

Busse, Ralph: *See—*
Reeve, John R., Jr.; Busse, Ralph; Walker, Elbert; Welch, Raymond L.; Moore, Hermus C., Jr.; and Jones, Milton P., 3,942,593.

Butler, L. Dennis; and Wadsworth, Thomas H., to Sperry Rand Corporation. Method and apparatus for forming a pair of two and one-half bale wide tier patterns. 3,942,652, Cl. 214-6.00B.

Byles, Theodore A., to Motorola, Inc. Timing circuit for flywheel ignition system. 3,942,501, Cl. 123-148.0CC.

Byrd Industries of Virginia, Inc.: *See—*
Harris, Deane F., 3,942,192.

Byrd, James J.: *See—*
O'Reilly, Dorothy F.; Byrd, James J.; and Finlayson, Allan T., 3,943,531.

C. E. Niehoff & Co.: *See—*
Jakobs, Hans; and Juhnke, Charles J., 3,943,408.

Cabot Corporation: *See—*
Reeve, John R., Jr.; Busse, Ralph; Walker, Elbert; Welch, Raymond L.; Moore, Hermus C., Jr.; and Jones, Milton P., 3,942,593.

Cahill, Terence, to GKN Somerset Wire Limited. Method of and apparatus for making wire strand. 3,942,309, Cl. 57-9.000.

Calgon Corporation: *See—*
Adams, Sally L.; Cook, Michael M.; and Martin, Fred David, 3,943,083.

Martin, Fred David; and Boothe, Jerry Emile, 3,943,060.
California Institute of Technology: *See—*
George, Nicholas, 3,942,861.
Cameron, Warren L. Sulky hitch. 3,942,305, Cl. 54-2.000.
Camphausen, Don L., to Xerox Corporation. Method for producing an image using persistent electrochromic materials. 3,943,528, Cl. 346-74.00E.
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defense: *See—*
Ratte, Jacques; and Bigras, Jean, 3,943,208.
Canadian Industries Limited: *See—*
Jones, Elwyn David; and Scuffell, Derek Edgar, 3,942,694.
Cannon, Robert L., III. Cardiac defibrillator depolarizing paddle arrangement. 3,942,533, Cl. 128-417.000.
Canoga Controls Corporation: *See—*
Koerner, Ralph J.; Bienhoff, Milton G.; Henderson, Martin C.; Higbee, John E.; and Koerner, Steve J., 3,943,339.
Canon Kabushiki Kaisha: *See—*
Furukawa, Hiroshi; and Tajima, Akira, 3,942,862.
Ishikawa, Yasuyuki, 3,942,745.
Uchidoi, Masanori, 3,943,381.
Canright, Bruce W. Combination meat smoking device and merchandise display case. 3,942,425, Cl. 99-467.000.
Cantine, Thomas G., Jr.; and Stacy, Robert J. Control system for a vehicle press. 3,942,432, Cl. 100-53.000.
Caputi, Arthur, Jr.: *See—*
Branscombe, Richard Alan; and Caputi, Arthur, Jr., 3,942,356.
Caragliano, Edward S.; and Nick, Howard H., to International Business Machines Corporation. Bidirectional single wire data transmission and wrap control. 3,943,283, Cl. 178-58.00R.
Carboni, Aldo J. Automotive door accessory for turning office vehicle headlight switch. 3,943,313, Cl. 200-61.620.
Carborundum Company, The: *See—*
Economy, James; and Lei, George Y., 3,942,947.
Carder, Charles Hobert: *See—*
Borden, George Wayne; and Carder, Charles Hobert, 3,943,103.
Carl Walther Sportwaffenfabrik: *See—*
Schaller, Bernhard; and Volkmar, Willi, 3,942,278.
Carroll, Alban David, Jr.; and Schisler, Lee C. Delayed release nutrients for mushroom culture. 3,942,969, Cl. 71-5.000.
Carroll, James C.; Curry, Johnny R.; Jorgensen, George N.; King, Frank D.; and McGoldrick, Gilbert A., to Square D Company. Dual preset service fitting or insert for underfloor wireway systems. 3,943,272, Cl. 174-48.000.
Carter, Glenn T.; and Paniszczyn, Thomas F., to General Dynamics Corporation. Aircraft having improved performance with beaver-tail afterbody configuration. 3,942,746, Cl. 244-13.000.
Case, Cecil L.; Fell, Ferol S.; and Burkhart, Merle K., to Hesston Corporation. Neutral safety lock for hydraulic implement controls. 3,942,602, Cl. 180-82.00A.
Case, Everett N., to Atlantic Richfield Company. Process for the defluorination of dilute fluorine containing aqueous acid solutions. 3,943,232, Cl. 423-317.000.
Castleberry, John, Jr.; Cecelski, Edward Peter; and Storz, Ralph Helmut, to RCA Corporation. Ultrasonic digital receiver. 3,943,491, Cl. 340-171.00R.
Caterpillar Mitsubishi Ltd.: *See—*
Aihara, Toru; and Kimura, Koichi, 3,943,306.
Caterpillar Tractor Co.: *See—*
Engel, Simon L.; and McFall, Robert A., 3,942,878.
Catnic Components Limited: *See—*
Robinson, Brian, 3,942,292.
Cawley, Richard E., to Lennox Industries Inc. Method for controlling the operation of two-speed, refrigerant motor compressors. 3,942,912, Cl. 417-53.000.
Caywood, John Millard, to Texas Instruments Incorporated. Three level electrode configuration for three phase charge coupled device. 3,943,543, Cl. 357-24.000.
CBS Inc.: *See—*
Gravereaux, Daniel W.; and Budelman, Gerald A., 3,943,287.
Cecelski, Edward Peter: *See—*
Castleberry, John, Jr.; Cecelski, Edward Peter; and Storz, Ralph Helmut, 3,943,491.
Celanese Corporation: *See—*
Druin, Melvin L.; and Oringer, Kenneth, 3,943,175.
Powers, Edward J.; and Hassinger, Walter P., 3,942,950.
Stackman, Robert W.; and Berardinelli, Frank M., 3,943,199.
Chalk, Thomas O. Spoked wheel and method of making same. 3,942,839, Cl. 301-73.000.
Chan, Trinh Dinh; Martino, Germain; Sajus, Lucien; and Roux-Guerraz, Claude, to Institut Francais du Petrole. Process for manufacturing hydrogenation catalysts. 3,943,067, Cl. 252-430.000.
Chang, David B.: *See—*
Drummond, James E.; Chang, David B.; and Mahaffey, Derek W., 3,942,975.
Chang, Kuo Wei: *See—*
Aisenberg, Sol; and Chang, Kuo Wei, 3,943,465
Chapman, Frank D.: *See—*
Southard, Archie F., Jr., 3,942,208.
Charbonnages de France: *See—*
Gagniere, Claude, 3,943,338.
Charbonneau, George M.; and Cummings, Leslie C., to Corning Glass Works. Pump for coffee brewing device. 3,942,424, Cl. 99-313.000.
Chavanoz S.A.: *See—*
Venot, Jean, 3,942,312.
Chemiebau Dr. A. Zieren GmbH & Co. KG.: *See—*
Furkert, Herbert, 3,943,237.
Cheng, King Y.: *See—*
Motley, David M.; and Cheng, King Y., 3,943,448.
Chervinsky, Jury Konstantinovich: *See—*
Berzin, Albert Yazepovich; Buslovich, Solomon Leibovich; Bush, Gunar Yanovich; Gershanov, Gennady Khaimovich; Zhagars, Aivar Alfredovich; Kalognomos, Viktor Ivanovich; Sokolov, Georgy Kondratievich; Chervinsky, Jury Konstantinovich; and Yakovich, Zigmund Yazepovich, 3,943,505.
Chevalier, Guy: *See—*
d'Auria, Luigi; Chevalier, Guy; Favreau, Michel; Huignard, Jean Pierre; Lacotte, Jean Pierre; and Puech, Claude, 3,943,559.
Reymond, Jean-Claude; d'Auria, Luigi; and Chevalier, Guy, 3,943,358.
Chevrolet, Gerard, to Roxer SA. Fluid distributor usable as air-support mattress. 3,942,202, Cl. 5-348.00R.
Chevron Research Company: *See—*
Hess, Patrick H., 3,943,084.
Chica, Quentin J. Spring-release safety holster. 3,942,692, Cl. 224-2.00B.
Chicago Bridge & Iron Company: *See—*
Kanzler, Alfred Avery, 3,942,379.
Chilman, John Alfred: *See—*
Keenan, John Gregory; Chilman, John Alfred; and Brooking, Ivor Harold, 3,942,911.
Chiu, Ying C., to Shell Oil Company. Process of displacing oil in subterranean reservoir employing aqueous surfactant systems. 3,943,059, Cl. 252-8.55D.
Chodash, Charles M., to Columbia Cable & Electric Corporation. Apparatus for accreting copper. 3,942,473, Cl. 118-610.000.
Christ, Alfred; Heinbockel, Wolfgang; Kahmann, Albrecht; Muller, Karl; and Kohrs, Manfred, to Escher Wyss GmbH. Stock pulper. 3,942,728, Cl. 241-46.170.
Christensen, Burton G.; Fordice, Michael W.; and Johnston, David B. R., to Merck & Co., Inc. (−)(Cis-1,2-epoxy propyl)phosphonic acid amides. 3,943,153, Cl. 260-348.00R.
Christensson, Od Wikar, to Christenssons Maskiner & Patenter Aktiebolag. Liquid and air tight package. 3,942,708, Cl. 229-14.0BA.
Christenssons Maskiner & Patenter Aktiebolag: *See—*
Christensson, Od Wikar, 3,942,708.
Chronometrics, Inc.: *See—*
Albertini, Eugene J.; and Lagomarsino, Max, 3,943,526.
Church, Armistead S.; Smick, William H., III; and Marsh, Walter W., to Philip Morris Incorporated. Traffic controller for multi-lane conveyor. 3,942,623, Cl. 198-32.000.
Ciba-Geigy AG: *See—*
Peter, Richard; and Angliker, Hans-Joerg, 3,943,120.
Toepfl, Werner, 3,942,971.
Ciba-Geigy Corporation: *See—*
Beriger, Ernst; Boger, Manfred; Drabek, Jozef; and Kristiansen, Odd, 3,943,202.
Gagneux, Andre; Heckendorn, Roland; and Meier, Rene, 3,943,145.
Meyer, Willy; Bohner, Beat; and Dawes, Dag, 3,943,144.
Orban, Ivan; and Rody, Jean, 3,943,139.
Porret, Daniel, 3,943,109.
Rody, Jean, 3,943,098.
Schmidt, Andreas; and Heller, Hansjorg, 3,943,106.
Schwarzenbach, Kurt, 3,943,096.
Seltzer, Raymond; and Sherman, Paul D., 3,943,107.
Seltzer, Raymond, 3,943,133.
Spivack, John J.; and Luzzi, John J., 3,943,102.
Citizen Watch Co., Ltd.: *See—*
Hatsuse, Toshikazu, 3,942,437.
Tokunaga, Yoshio; and Shinano, Keizo, 3,942,287.
Clairol Incorporated: *See—*
Hlavac, Andrew E., 3,943,329.
Clarebout, Pierre M.: *See—*
Vanhoof, Pierre M.; and Clarebout, Pierre M., 3,943,172.
Claremont Polychemical Corporation: *See—*
Brook, John W., 3,943,081.
Clark Equipment Company: *See—*
DePriester, Donald J.; and Marks, Neal J., 3,942,600.
Clark, Gaylord J. Brush frame and shell. 3,942,210, Cl. 15-179.000.
Clark, Gaylord J. Brush with removable brush strips. 3,942,211, Cl. 15-183.000.
Clark, Robert J.; Davis, Gordon H.; and Zaky, Amin Y., to Stromberg-Carlson Corporation. Automatic number identification. 3,943,298, Cl. 179-18.0FH.
Clark Technical Incorporated: *See—*
Foster, Allen, 3,942,840.
Clark, Thomas A.: *See—*
Phillips, John J.; and Clark, Thomas A., 3,942,227.
Clarke, Anthony James: *See—*
Fishbein, John; Bell, Raymond William Henry; Clarke, Anthony James; and Merriman, Peter, 3,943,075.
Clausen, Claus. Apparatus for removing roots from bulbs or the like corms. 3,942,428, Cl. 99-640.000.
Clayton, William J.: *See—*
Olson, Robert H.; and Clayton, William J., 3,942,713.
Clement, Gilbert-Louis, to Infranor S.A. Apparatus for securing a workpiece to be machined on a machine. 3,942,780, Cl. 269-47.000.
Clements, Herbert Arthur, to S.S.S. Patents Limited. Electrical power generating plant. 3,943,374, Cl. 290-52.000.
Clevepak Corporation: *See—*
Engle, Donald W., 3,942,837.
Gepfer, Richard E., 3,942,709.

Clucker, Richard V.; and Kennedy, Roland R., to Harsco Corporation. Control system for refuse handling apparatus. 3,942,661, Cl. 214-83.300.

Cobb, Jesse M.: *See—*
Raab, Andrew F.; and Cobb, Jesse M., 3,942,555.

Coca-Cola Company, The: *See—*
Amon, Anton; and Sedam, Jason K., 3,943,261.
Uchino, Susumu, 3,942,665.

Cochrane, Richard H.: *See—*
Hart, Charles G.; Cochrane, Richard H.; and Heiner, Harvey, 3,942,304.

Cohn, Charles E., to United States of America, Energy Research & Development Administration. Reducing gain shifts in photomultiplier tubes. 3,943,458, Cl. 330-42.000.

Cohnen, Wolfgang: *See—*
Margotte, Dieter; Lachmann, Burkhard; Vernaleken, Hugo; Rudolph, Hans; and Cohnen, Wolfgang, 3,943,094.

Colardelle, Joel Serge; Comte, Marie-Helene; and Regnier, Marc Andre, to International Standard Electric Corporation. Electronic feeding bridge. 3,943,432, Cl. 323-7.000.

Cole, Clarence R.; and Duncan, Robert L., to Goodyear Tire & Rubber Company, The. Tire press and mold leakage control. 3,942,922, Cl. 425-30.000.

Colella, Donald F.; and Kaiser, Carl, to SmithKline Corporation. 3-Alkylamino- alpha-aminomethyl-4-hydroxybenzyl alcohols. 3,943,173, Cl. 260-570.600.

Colella, Donald F.; and Kaiser, Carl, to Smithkline Corporation. Beta-adrenergic antagonists. 3,943,254, Cl. 424-321.000.

Coleman, Marvin Witham. Key locating attachment for controlling the depth of penetration of a key into a lock. 3,942,347, Cl. 70-395.000.

Colgate-Palmolive Company: *See—*
Delaney, Thomas James; and Pierson, William Grant, 3,943,240.
Thomas, Tedd Theodore, 3,942,667.

Collie, Stafford D., to Potlatch Corporation. Folding carton with interior struts. 3,942,710, Cl. 229-39.00R.

Collins, Ian: *See—*
Ellis, Gwynn Pennant; Collins, Ian; Waters, David Martin; and Bays, David Edmund, 3,943,141.

Columbia Cable & Electric Corporation: *See—*
Chodash, Charles M., 3,942,473.

Commercial Decal, Inc.: *See—*
Weingrad, Saul, 3,943,023.

Communications Satellite Corporation: *See—*
Dendall, Robert John, 3,943,003.

Compagnie Generale d'Automatisme: *See—*
Dupuy, Marcel, 3,942,541.

Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Melchior, Gerald, 3,943,453.

Compteurs Schlumberger: *See—*
Seite, Guy; and Gauthier, Michel, 3,942,491.

Comsonics, Inc.: *See—*
Shomo, Glen Keller, III, 3,943,447.

Comte, Marie-Helene: *See—*
Colardelle, Joel Serge; Comte, Marie-Helene; and Regnier, Marc Andre, 3,943,432.

Congoleum Industries, Inc.: *See—*
Petry, Robert K.; and Shortway, Harry A., 3,943,018.

Connors, Malcolm E.; Guazzaloca, William A.; and Wood, Herbert T. Slip casting machine. 3,942,563, Cl. 141-88.000.

Constructions Electriques R.V.: *See—*
Simeau, Bernard Jules Alexandre, 3,943,386.

Container Corporation of America: *See—*
Desmond, John D.; and Hart, Joseph J., 3,942,711.
Smith, Curtis J., 3,942,418.
Starr, Anthony J., 3,942,679.

Continental Can Company, Inc.: *See—*
Hasegawa, Gary, 3,942,675.
Szatkowski, Richard R., 3,943,212.

Continental Oil Company: *See—*
McCain, David L.; and Dahl, Hilbert D., 3,942,841.
Radd, Frederick J.; and Oertle, Donald H., 3,942,546.

Conway, Henry Lawrence: *See—*
Thompson, Brian Hoyle; and Conway, Henry Lawrence, 3,942,958.

Cook, Edward H., Jr., to Hooker Chemicals & Plastics Corporation. Anode for electrolytic processes. 3,943,042, Cl. 204-95.000.

Cook Electric Company: *See—*
Wickstrom, Harry L., 3,943,412.

Cook, Elton S.; and Berberich, Norbert J., Jr., to Stanley Drug Products, Inc. Anti-microbial factors effective against bacillic and coccic infections. 3,943,244, Cl. 424-95.000.

Cook, Michael M.: *See—*
Adams, Sally L.; Cook, Michael M.; and Martin, Fred David, 3,943,083.

Cook, Richard S., to PPG Industries, Inc. Metal oxide coated refractory brick. 3,942,293, Cl. 52-232.000.

Cooper, Glenn D.; and Abolins, Visvaldis, to General Electric Company. Blends of a polyphenylene ether resin and alkenyl aromatic resins modified with EPDM rubber. 3,943,191, Cl. 260-876.00R.

Cordrey, Philip William; Frankland, John David; and Highgate, Donald James, to Special Polymers Limited. Irradiation of hydrophilic and hydrophobic monomers to produce hydrophilic copolymers. 3,943,045, Cl. 204-159.220.

Corey, Elias J.; Bindra, Jasjit S.; and Schaaf, Thomas K., to Pfizer Inc. Prostaglandin intermediates. 3,943,151, Cl. 260-343.20R.

Corliss, Joseph J.; and Spector, George. Antiseptic cleansing dental floss. 3,942,539, Cl. 132-79.00E.

Cornell, Frank M., to Neo-Pro Corporation. Metal recovery process. 3,942,976, Cl. 75-23.000.

Corning Glass Works: *See—*
Charbonneau, George M.; and Cummings, Leslie C., 3,942,424.
Flannery, James E., 3,942,992.

Cornu, Josef: *See—*
Jaecklin, Andre A.; Cornu, Josef; and Lietz, Manfred, 3,943,549.

Corsi, Gianfranco; and Watson, George Michael. Computing apparatus. 3,943,341, Cl. 235-150.520.

Corwin Games, Inc.: *See—*
Cory, Richard G., 3,942,799.

Cory, Richard G., to Corwin Games, Inc. Board game apparatus. 3,942,799, Cl. 273-134.0AD.

Costain, Thomas S., to United States of America, Army. Process for producing silver azide. 3,943,235, Cl. 423-410.000.

Costantini, Michel: *See—*
Bost, Pierre-Etienne; Costantini, Michel; Jouffret, Michel; and Lartigau, Guy, 3,943,179.

Couch, Terry Lee: *See—*
Stein, Robert George; Crovetti, Aldo Joseph; and Couch, Terry Lee, 3,943,249.

Coucher, Robert G., to Pioneer Associates. Grain milling wheels. 3,942,730, Cl. 241-248.000.

Coulthard, Douglas, to Polysar Limited. Elastomeric blends. 3,943,192, Cl. 260-890.000.

Council, Henry M. Non-hostage vehicle. 3,942,598, Cl. 180-6.500.

Courbot, Pierre: *See—*
Le Marchand, Claude; and Courbot, Pierre, 3,942,612.

Cournoyer, Bernard T.; Wright, David M.; and O'Toole, Jerome M., to Barry Wright Corporation. Disk guard device. 3,942,639, Cl. 206-444.000.

Coutin, Pierre Fernand: *See—*
Hasquenoph, Jean Henri; and Coutin, Pierre Fernand, 3,942,749.

Cover, Paul F., to United Company, The. Apparatus for orienting articles having at least one tapered end. 3,942,629, Cl. 198-254.000.

Covington, Cecil E.: *See—*
Snyder, David E.; and Covington, Cecil E., 3,942,910.

Cox, Donald Clyde; and Reudink, Douglas Otto John, to Bell Telephone Laboratories Incorporated. Amplitude equalizer using mixing for error detection. 3,943,468, Cl. 333-18.000.

Craig, Dennis K. Multi-speed hub with brake. 3,942,615, Cl. 192-6.00A.

Crandall, Azel L. Multicelled, tubeless safety tire with air activated snow and ice studs. 3,942,572, Cl. 152-208.000.

Creusot-Loire Entreprises: *See—*
Bonnaure, Edouard, 3,942,658.

Croftshaw (Engineers) Limited: *See—*
Girard, Maurice Victor, 3,942,960.

Cromeens, Jeff Y., to Industrial Woodworking Machine Co., Inc. Apparatus for assembling finger jointed lumber. 3,942,233, Cl. 29-200.00R.

Crompton Electricars Limited: *See—*
Hind, Malcolm Arthur, 3,943,420.

Cross Company, The: *See—*
Swis, Philip E.; and Brown, Glenn M., 3,942,363.

Crosslen, Louis John, to Frank Mayer & Associates, Inc. Merchandise display rack. 3,942,647, Cl. 211-144.000.

Crovetti, Aldo Joseph: *See—*
Stein, Robert George; Crovetti, Aldo Joseph; and Couch, Terry Lee, 3,943,249.

Crowell, Lee Tyler; Greenwood, Robert C.; and Jones, Thomas E., to Pan Nova, Inc. Change mechanism for a gasoline dispense or the like. 3,942,543, Cl. 133-2.000.

Crutchfield, Billie M. Method and apparatus for controlling the movement of a vehicle along a prescribed path. 3,942,720, Cl. 238-4.000.

Cruzan, Orval R., to United States of America, Army. Optical fuze and/or miss distance indicator. 3,942,446, Cl. 102-70.20P.

Cruzan, Paul David; and Tisone, Thomas Charles, to Bell Telephone Laboratories, Incorporated. Selective removal of material by sputter etching. 3,943,047, Cl. 204-192.000.

Csongor, Desider G. Method and apparatus for extruding melted plastic mixtures. 3,942,773, Cl. 259-191.000.

Culver, William Howard. Remote controlled vehicle systems. 3,943,357, Cl. 250-199.000.

Cummings, Leslie C.: *See—*
Charbonneau, George M.; and Cummings, Leslie C., 3,942,424.

Cunningham, Donald M., to Emerson Electric Co. Electric heating elements. 3,943,328, Cl. 219-335.000.

Cupp, Calvin R.: *See—*
Fisher, Gordon L.; and Cupp, Calvin R., 3,943,048.

Curry, Johnny R.: *See—*
Carroll, James C.; Curry, Johnny R.; Jorgensen, George N.; King, Frank D.; and McGoldrick, Gilbert A., 3,943,272.

Curtiss-Wright Corporation: *See—*
Hermes, Walter L., 3,942,918.

Cutler-Hammer, Inc.: *See—*
Tosto, Paul S., 3,943,459.

Cyborg Corporation: *See—*
Glynn, Thomas W.; and James, J. Michael, 3,942,516.

Cziska, Johann; Strauss, George; Portz, Wilhelm; Komorniczyk, Klaus; and Kandler, Joachim, to Hoechst Aktiengesellschaft. Use of an iron/silicon/phosphorus-alloy in separation of minerals. 3,943,061, Cl. 252-60.000.

Dahl, Hilbert D.: *See—*
McCain, David L.; and Dahl, Hilbert D., 3,942,841.
Dahlen, Emile O.: *See—*
Fishwick, John Henry; and Dahlen, Emile O., 3,942,977.
Dai-Nippon Jachugiku Co., Ltd.: *See—*
Yamaguchi, Takashi; Abe, Yasuo; and Fujita, Yoshio, 3,943,239.
Daimler-Benz AG: *See—*
Scherenberg, Hans O.; van Winsen, Friedrich H.; and Waxenberger, Erich, 3,942,816.
Daimler-Benz Aktiengesellschaft: *See—*
Forster, Hans-Joachim M.; Eltze, Georg; and Steinbrenner, Hans, 3,942,393.
Frotschner, Eberhardt K., 3,942,613.
Gorres, Bruno; Schuldt, Oswald; and van Winsen, Friedrich H., 3,942,502.
Zink, Anton, 3,942,487.
Dakin, Gerald Frank, Jr.; Olney, Georges Louis; and Smyth, Desmond Patrick Robertson, to Johns-Manville Corporation. Apparatus for removing compacted fibrous materials from containers. 3,942,689, Cl. 222-195.000.
Dalle, Jean-Paul, to Omnium de Prospective Industrielle, S.A. Process for treating cellulosic materials by liquid ammonia. 3,942,948, Cl. 8-125.000.
Dalle, Jean-Paul. Process for the treatment with a fluid of textile materials in the form of threads, sheets of threads, sheets of webbing or in any other continuous form. 3,942,949, Cl. 8-125.000.
Dana Corporation: *See—*
Levering, Paul D., 3,942,845.
Wojcikowski, Richard J., 3,942,556.
Danalet Kuffertfabrik A/S: *See—*
Olsen, Harry Herbert; and Hjort, Mogens Ivan, 3,943,030.
Danfoss A/S: *See—*
Schmidt, Jorn Marius, 3,943,092.
Dany, Franz-Josef; Wortmann, Joachim; Munch, Peter; and Braun, Gunther, to Hoechst Aktiengesellschaft; and Ruhrchemie Aktiengesellschaft. Flameproof moulding compositions based on polyolefins. 3,943,194, Cl. 260-897.00B.
Dao, Tich T.: *See—*
Russell, Lewis K.; Dao, Tich T.; and Muller, Richard S., 3,943,554.
Datta, Pabitra, to Addressograph Multigraph Corporation. Photosensitive composition containing a polyhalogenated initiator and a cumulene dye former. 3,942,988, Cl. 96-90.00R.
d'Auria, Luigi; Chevalier, Guy; Favreau, Michel; Huignard, Jean Pierre; Lacotte, Jean Pierre; and Puech, Claude, to Thomson-CSF. Telecinema system using electroluminescent diodes. 3,943,559, Cl. 358-6.000.
d'Auria, Luigi: *See—*
Reymond, Jean-Claude; d'Auria, Luigi; and Chevalier, Guy, 3,943,358.
Davis, Donald MacKinnon. Apparatus and process for manufacturing non-woven textile pile. 3,943,028, Cl. 156-435.000.
Davis, Gordon H.: *See—*
Clark, Robert J.; Davis, Gordon H.; and Zaky, Amin Y., 3,943,298.
Davis, Paul F., to Kraftco Corporation. Whey product. 3,943,264, Cl. 426-330.200.
Davis, Samuel: *See—*
Timmermeyer, Leo C.; Davis, Samuel; and Knight, William J., 3,943,414.
Dawes, Dag: *See—*
Meyer, Willy; Bohner, Beat; and Dawes, Dag, 3,943,144.
Dawson, Edward F. Apparatus for signalling position of downed aircraft. 3,943,445, Cl. 325-115.000.
Dawson, John D.; and Spector, George. Twin pedal energizer. 3,942,791, Cl. 272-83.00R.
Day, David Roger; and McElroy, Lucian Grant. Trash compactor. 3,942,430, Cl. 100-52.000.
Dayton Progress Corporation: *See—*
Randolph, Allan E., Sr., 3,942,354.
Dazey Products Co.: *See—*
McNair, Samuel L., 3,942,520.
Deaver, Royce D., to Exxon Research & Engineering Co. Safety stop for pressurized pipeline. 3,942,560, Cl. 138-89.000.
DeBoer, Herman Owen, Jr.: *See—*
Ponczek, George Mark; and DeBoer, Herman Owen, Jr., 3,942,247.
Debski, Mieczyslaw: *See—*
Harpula, Jan; Piszak, Jur; Debski, Mieczyslaw; Rzepa, Tadeusz; Sliwa, Jerzy; and Heryan, Andrzej, 3,943,089.
Deck, Harold R.: *See—*
Brady, Donnie G.; Deck, Harold R.; Jones, Faber B.; and Underwood, John H., 3,943,164.
Deering Milliken Research Corporation: *See—*
Klein, Norman E.; and Stewart, William H., Jr., 3,942,342.
Klein, Norman E., 3,942,343.
Wethington, Charles A., 3,943,027.
De Filippis, John, to International Telephone and Telegraph Corporation. Flash attachment for self-developing collapsible cameras. 3,943,532, Cl. 354-126.000.
Degenhart, Thomas Wayne, to General Electric Company. Electromagnetic switching device having an improved energizing circuit. 3,943,416, Cl. 317-154.000.
Dehner, Bernard J., to Tonka Corporation. Miniature toy vehicle construction. 3,942,285, Cl. 46-201.000.
DeJarnette, Malcolm B., to General Electric Company. Transformer having improved voltage and phase characteristics. 3,943,435, Cl. 323-76.000.
Delaney, Thomas James; and Pierson, William Grant, to Colgate-Palmolive Company. Toothpaste. 3,943,240, Cl. 424-49.000.
Delaplace, Lucien; and Mevel, Jean-Claude, to Stein Industrie. Burner for the direct heating up of a fluid by action of the combustion. 3,942,945, Cl. 432-222.000.
del Castillo, Juan M. Optical metronome with transparent sheet music. 3,942,404, Cl. 84-484.000.
de Leeuw, Jan, to Autochem Instrument AB. Dosing device particularly for small quantities of liquid. 3,942,916, Cl. 417-568.000.
Dellorfano, Fred M., Jr.: *See—*
Massa, Frank, 3,943,388.
Delpretti, Roger: *See—*
Lehmann, Hans; Girardin, Roger; Morf, William; and Delpretti, Roger, 3,943,322.
Delta Plastics Limited: *See—*
Wassilieff, Alexander; and Shannon, Patrick, 3,942,475.
Demag, A.G.: *See—*
Stabel, Michael; and Scheulen, Matthias, 3,942,453.
DeMarinis, Robert M.; and Hoover, John R. E., to SmithKline Corporation. 7-Trifluoromethylsulfinylacetamido cephalosporins. 3,943,127, Cl. 260-243.00C.
DeMarinis, Robert M.; and Hoover, John R. E., to SmithKline Corporation. 7-Trifluoromethylsulfinylacetamido cephalosporins. 3,943,128, Cl. 260-243.00C.
De Marinis, Robert M.; and Hoover, John R. E., to SmithKline Corporation. Trifluoromethylmercaptoacetamidocephalosporins. 3,943,131, Cl. 424-246.000.
De Mets, Albert, to Bison-werke Bahre & Greten GmbH & Co. KG. Presses for the production of boards such as chipboard, fiberboard and the like. 3,942,927, Cl. 425-135.000.
De Mets, Albert, to Bison-Werke Bahre & Greten GmbH & Co. KG. Continuously operating press. 3,942,929, Cl. 425-143.000.
Dempsey, Donald Joseph, to RCA Corporation. Sidelobe lock-on discriminating method for search-track monopulse radar. 3,943,512, Cl. 343-7.400.
Dendall, Robert John, to Communications Satellite Corporation. Padded solar cell contacts. 3,943,003, Cl. 136-89.000.
Deneke, Karlheinz; and Paas, Hans, to Opti-Holding AG. Slide-fastener package. 3,942,635, Cl. 206-338.000.
Denki Onkyo Co., Ltd.: *See—*
Masuda, Noboru; Nishino, Yu; and Takiguchi, Hisashi, 3,943,481.
Denniston, Rollin H., III: *See—*
Mirowski, Mieczyslaw; Mower, Morton M.; and Denniston, Rollin H., III, 3,942,536.
Deppeler, Rene. Electrical back-combing device. 3,942,538, Cl. 132-11.00R.
DePriester, Donald J.; and Marks, Neal J., to Clark Equipment Company. Lift truck with muffler in overhead guard. 3,942,600, Cl. 180-64.00A.
de Putter, Warner Jan, to Wavin B.V. Electrically conducting plastic pipe system. 3,943,273, Cl. 174-84.00S.
DeRoeck, Joseph Irma: *See—*
Pira, Camille Francois; and DeRoeck, Joseph Irma, 3,942,696.
Desmond, John D.; and Hart, Joseph J., to Container Corporation of America. Decorative carton closure. 3,942,711, Cl. 229-39.00R.
De Sorga, Miksa; and McGinniss, Vincent D., to SCM Corporation. UV curing process employing flash photolysis. 3,943,046, Cl. 204-159.230.
Deussner, Herbert; and Fleischer, Joachim, to Klockner-Humboldt-Deutz AG. Rotary tubular furnace. 3,942,942, Cl. 432-80.000.
Deutsche Babcock & Wilcox Aktiengesellschaft: *See—*
Opitzer, Rudolf, 3,942,589.
Deutsche Edelstahlwerke Aktiengesellschaft: *See—*
Frehn, Fritz, 3,942,954.
de Villemeur, Philippe, to Etablissements A. Gregoire & Barilleau. Tool-free detachable electric power connector. 3,942,855, Cl. 339-21.00R.
Dezael, Claude; Poitevin, Jean-Pierre; and Renault, Philippe, to Institut Francais du Petrole, des Carburants & Lubrifiants. Process for efficiently purifying industrial gas. 3,943,228, Cl. 423-237.000.
Diamant, Frederick J. Method of making shoes. 3,942,206, Cl. 12-142.00R.
Diamond Shamrock Corporation: *See—*
Fenn, Robert W., III; and O'Leary, Kevin J., 3,943,044.
Dias, Incorporated: *See—*
Thomas, Carlisle Alton, 3,942,915.
Di Blas, Umberto; and Knirsch, Franco, to Minnesota Mining and Manufacturing Company. Electroless deposition of a non-noble metal on light generated nuclei of a metal more noble than silver. 3,942,983, Cl. 96-48.0PD.
Dick, Charles W., to Western Geophysical Company of America. Method of land seismic exploration using flexible tubes. 3,942,606, Cl. 181-122.000.
Dick, John O.: *See—*
Van Orsdel, Kenneth A.; and Dick, John O., 3,942,447.
Dickey, Clarence A.; and McDaniel, John E., to Glasrock Products, Inc. Unitary porous themoplastic writing nib. 3,942,903, Cl. 401-198.000.
Dickey, Clarence A.; and Smoot, Thomas W., to Glasrock Products, Inc. Method of preparing magnesium oxide spheroids. 3,943,211, Cl. 264-15.000.

Dickopp, Gerhard; Potter, Manfred; and Brehm, Otto, to TED Bildplatten Aktiengesellschaft AEG-Telefunken-Teldec. Demodulation system with dropout correction. 3,943,274, Cl. 178-6.6DC.

Diebold, Incorporated: *See—*
Kinker, Donald E.; and Morello, Herbert, 3,943,335.

Dieterich, Dieter: *See—*
Schroer, Walter; Reiff, Helmut; Dieterich, Dieter; and Berger, Karl, 3,943,252.

Dietrich, Werner; Wagner, Kuno; and Eifler, Willi, to Bayer Aktiengesellschaft. Urea diisocyanate compositions. 3,943,158, Cl. 260-453.00A.

Dietz, Charles F.: *See—*
Friedel, William C., Jr.; Dietz, Charles F.; and Marshall, Lowell K., 3,942,590.

Dietze, Wolfgang; and Kasper, Andreas, to Siemens Aktiengesellschaft. Method of manufacturing shaped hollow bodies. 3,943,218, Cl. 264-81.000.

Difford, Anthony Miles Robert, to Imperial Chemical Industries Limited. Fluids purification. 3,943,226, Cl. 423-230.000.

Dillard, John W.; and Tringali, Dominick, to Universal Business Machines. Photoelectric scanning systems for reading data appearing in an angular format. 3,943,336, Cl. 235-61.11E.

Dillinger, James Roland; Herald, Robert Frederick; and Miller, Irving Lionel, to International Business Machines Corporation. Printing mechanism. 3,942,620, Cl. 197-1.00R.

Dimeff, John, to United States of America, General Counsel-Code GP. Method and apparatus for compensating reflection losses in a path length modulated absorption-absorption trace gas detector. 3,943,368, Cl. 250-573.000.

Dinger, Hans, to Motoren- und Turbinen-Union Friedrichshafen GmbH. Sealing arrangement. 3,942,807, Cl. 277-180.000.

Dinglinger, Wolfgang; and Rolf, Eckard, to Erno Raumfahrttechnik. Rescue equipment for submarine vehicles. 3,942,456, Cl. 114-16.00E.

DND Corporation: *See—*
Sherer, C. Richard; and Foyle, Russell M., 3,942,248.

Doby, William P.: *See—*
McClelland, Theodore M., III; and Doby, William P., 3,943,498.

Doi, Yasuo: *See—*
Murata, Hikaru; Umeda, Yasuji; Sakurai, Yasusada; and Doi, Yasuo, 3,942,548.

Dombroski, Bernard F. Apparatus for facilitating movement of furniture. 3,942,813, Cl. 280-47.13R.

Domke, Klaus, to Fr. Hesser Maschinenfabrik AG. Apparatus for producing low-oxygen content packages. 3,942,301, Cl. 53-110.000.

Dompas, John M.; Ghyselen, Jean L. J. E.; and Mortier, Rene E. J., to Metallurgie Hoboken-Overpelt. Manufacture of copper wire rod. 3,942,582, Cl. 164-76.000.

Dore, Jean Pierre. Method for reinforcing structures. 3,942,238, Cl. 29-433.000.

Dorman Smith Switchgear Limited: *See—*
Kidd, Alan Lister; Eaves, Douglas; and Walmsley, Keith, 3,943,477.

Dornier System GmbH: *See—*
Hoff, Gunter; and Behrendt, Armin, 3,942,531.

Dorren, Louis, to Quadracast Systems, Inc. Multi-mono FM system. 3,943,294, Cl. 179-15.0BT.

Dosch, Erwin L.: *See—*
Sheldon, Norman A.; and Dosch, Erwin L., 3,943,289.

Douglas, Edward Curtis: *See—*
Mueller, Charles William; and Douglas, Edward Curtis, 3,943,555.

Douta, Kikuo: *See—*
Yanazawa, Hiroshi; Hashimoto, Norikazu; Ashikawa, Mikio; and Douta, Kikuo, 3,942,982.

Dow Chemical Company, The: *See—*
Dunbar, Joseph E.; and Bohnert, Thomas J., 3,943,176.
Newman, Ritchey O., Jr.; and McCullough, Thomas W., 3,942,331.

Dowa-Mining Co., Ltd., The: *See—*
Yamamichi, Yoshikazu; and Nagao, Jun-ichi, 3,943,230.

Dowty Rotol Limited: *See—*
Keenan, John Gregory; Chilman, John Alfred; and Brooking, Ivor Harold, 3,942,911.

Doyel, John S. Modular frame for stretching sheet material suitable for home use in hobby activities. 3,942,272, Cl. 38-102.910.

Doyle, Lester W.; and Veldman, Bernard T., Sr., to Reliance Electric Company. Auxiliary sealing structure for a shaft bearing. 3,942,849, Cl. 308-187.100.

Drabek, Jozef: *See—*
Beriger, Ernst; Boger, Manfred; Drabek, Jozef; and Kristiansen, Odd, 3,943,202.

Dracard Limited: *See—*
Bowles, Leslie Reginald; and Heath-Coleman, Roy Albert, 3,942,517.

Dragan, William B. Athletic wrap. 3,942,525, Cl. 128-165.000.

Dravo Corporation: *See—*
Muller, Hermann, 3,942,263.

Dresser Europe S.A.: *See—*
Buchanan, Donald George, 3,943,500.

Drewett, Robin: *See—*
Billington, Richard W.; and Drewett, Robin, 3,943,043.

Dreyer, Marco, to Boa AG Luzern. Corrugated tubing. 3,942,702, Cl. 228-145.000.

Drill-Au-Mation, Inc.: *See—*
Smith, Hubert Irvin; and Ott, Fred L., 3,942,594.

Dromsky, John A., to Texas Instruments Incorporated. Deformable composite material. 3,943,011, Cl. 148-34.000.

Drostholm, Frede Hilmar. Method and apparatus for making continuous lengths of resin tubes. 3,943,224, Cl. 264-209.000.

Druin, Melvin L.; and Oringer, Kenneth, to Celanese Corporation. Synthesis of pure 3,3'-diaminobenzidine. 3,943,175, Cl. 260-581.000.

Drummond, James E.; Chang, David B.; and Mahaffey, Derek W., to Boeing Company, The. Method and apparatus for reducing matter to constituent elements and separating one of the elements from the other elements. 3,942,975, Cl. 75-10.00R.

Du-Kote Corporation: *See—*
Bernath, John, 3,942,408.

Duepper, Paul: *See—*
Brauer, Hans; and Duepper, Paul, 3,942,350.

Dufaylite Developments Limited: *See—*
White, Desmond Deverell, 3,942,300.

Dulog, Lothar G., to S.A. Texaco Belgium N.V. Vinyl phosphonic acid-divinyl sulfone copolymer ion exchange resin. 3,943,074, Cl. 260-2.20R.

Dunbar, Joseph E.; and Bohnert, Thomas J., to Dow Chemical Company, The. 2-(Sulfur-substituted)-3-hydroxy-5,5-dimethyl-2-cyclohexen-1-ones. 3,943,176, Cl. 260-586.00R.

Duncan, Robert L.: *See—*
Cole, Clarence R.; and Duncan, Robert L., 3,942,922.

Dunlap, Michael A.: *See—*
Eckhardt, Dennis C.; Dunlap, Michael A.; and Hoppe, Robert A., 3,942,321.

Dunlop Holdings Limited: *See—*
Fishbein, John; Bell, Raymond William Henry; Clarke, Anthony James; and Merriman, Peter, 3,943,075.

Dunn, Guy A. Vehicle drive and control system. 3,942,390, Cl. 74-529.000.

Dunn, Peter Douglas: *See—*
Pollock, James Francis; Dunn, Peter Douglas; Rice, Graham; and Power, Basil Dixon, 3,943,330.

Dunphy, Matthew J., to Pyrotector, Incorporated. Portable fire detector. 3,943,499, Cl. 340-227.00R.

Du Pont de Nemours, E. I., and Company: *See—*
Adams, Charles De Witt, 3,943,163.
Green, Ralph V., 3,943,236.
Higgins, James Francis, 3,942,998.
Kook, John F., 3,943,243.
Livingston, Richard Donnan, 3,943,095.
McIntosh, Colin Leslie, 3,943,201.
Middleton, William J., 3,943,112.
Morgan, Paul Winthrop, 3,943,110.
Patterson, Frank Knowles, 3,943,168.
Wu, Souheng, 3,943,187.

Dupuy, Marcel, to Compagnie Generale d'Automatisme. Device enabling the conveying, one by one, of coins inserted in bulk in a receptacle. 3,942,541, Cl. 133-1.00R.

Dura-Hair International, Inc.: *See—*
Bauman, Jack, 3,942,195.

Dura Products, Inc.: *See—*
Schwartz, Paul H., 3,942,924.

Durex Products, Inc.: *See—*
Simonson, Gordon L., 3,943,054.

Duverne, Pierre: *See—*
Abel, Patrice; Duverne, Pierre; Elziere, Jean-Bernard; and Reffye, Jerome Verchere de, 3,943,349.

Duyckinck, Robert W., to U.S. Filter Company. Pulse jet and venturi liner. 3,942,962, Cl. 55-302.000.

Dyno Industrier A/S: *See—*
Svendsen, Johan per Greijner, 3,942,933.

E. & J. Gallo Winery: *See—*
Branscombe, Richard Alan; and Caputi, Arthur, Jr., 3,942,356.

E. R. Carpenter Company, Inc.: *See—*
Jenkins, Harry Lee; and Wright, Bobby Dean, 3,942,776.

E. R. Squibb & Sons, Inc.: *See—*
Hauck, Frederic Peter, 3,943,149.
Treuner, Uwe D.; and Breuer, Hermann, 3,943,130.

Eager, George S., Jr.: *See—*
Bahder, George; Eager, George S., Jr.; and Silver, David A., 3,943,271.

Eastman Kodak Company: *See—*
Landholm, Richard A.; Haase, Jan R.; and Krutak, James J., Sr., 3,942,987.
Maner, Ronald J.; and Weaver, Max A., 3,943,121.
Musser, Harry Robert; and Jackson, Winston Jerome, Jr., 3,943,189.
Owen, John R., 3,943,142.

Eaton Corporation: *See—*
Lindner, Marvin T., 3,942,685.

Eaves, Douglas: *See—*
Kidd, Alan Lister; Eaves, Douglas; and Walmsley, Keith, 3,943,477.

Ebauches Bettlach S.A.: *See—*
Schluep, Jean-Pierre, 3,942,317.

Eberhard, Everett; Gemmell, Frank S.; and Moore, Randolph G., to Motorola Inc. System and method for selecting Doppler altered reflected signals. 3,943,513, Cl. 343-7.700.

Eberle, Richard Francis; and Kroetz, John Alden, to W. R. Grace & Co. Low temperature storage container. 3,942,668, Cl. 220-8.000.

Eberle, William J., to General Battery Corporation. Apparatus for thermal relay welding. 3,942,704, Cl. 228-58.000.

Eburn, William H., Jr.: *See—*
Ackley, Kenneth E.; Eburn, William H., Jr.; and Lucas, Paul A., 3,942,416.

Eckhardt, Dennis C.; Dunlap, Michael A.; and Hoppe, Robert A., to General Motors Corporation. Engine secondary air control valve. 3,942,321, Cl. 60-289.000.

Economy, James; and Lei, George Y., to Carborundum Company, The. Dyeing novoloid fibers with disperse dyes. 3,942,947, Cl. 8-93.000.

Eddy, Robert T., to Reliance Electric Company. Hydraulic device. 3,942,414, Cl. 91-487.000.

Ede, Ainsley Neville. Ground treatment apparatus. 3,942,722, Cl. 239-102.000.

Edlund, Roy, to Busak & Luyken KG,, Firma. Sealing ring structure. 3,942,806, Cl. 277-165.000.

Edwards, Allen P., to Hewlett-Packard Company. Sensitivity coding circuit for an electronic instrument. 3,943,440, Cl. 324-95.000.

Edwards, Clarence K.; and Edwards, Lawrence D. Model railway system providing uncoupling and delayed recoupling. 3,942,648, Cl. 213-75.0TC.

Edwards, Lawrence D.: *See—*
Edwards, Clarence K.; and Edwards, Lawrence D., 3,942,648.

Efimov, Igor Alexandrovich: *See—*
Aristarkhov, Nikolai Nikolaevich; Efimov, Igor Alexandrovich; Zaitsev, Boris Ivanovich; Peters, Iskra Genrikhovna; Tymosh, Boris Severianovich; Filonov, Viktor Sergeevich; Sharov, Alexei Lavrentievich; Shildin, Alexei Ivanovich; Balashova, Galina Stepanovna; Bets, Nikolai Ivanovich; Skvortsov, Stanislav Alexandrovich; Yakovleva, Valentina Stepanovna; Zhuchkov, Ivan Ilich; Gorjunov, Vladimir Sergeevich; Petrov, Vladimir Alexeevich; Kevrolev, Vladimir Petrovich; Rybakov, Valery Nikolaevich; and Tverdovsky, Ninel Dmitrievich, 3,943,365.

Egner, Ronald J., to Textron Inc. Slab-sided self-tapping screw. 3,942,406, Cl. 85-47.000.

Ehara, Toshiyasu: *See—*
Takahashi, Toshio; Tagaya, Ryosaku; and Ehara, Toshiyasu, 3,942,897.

Eheim, Franz; and Fehlmann, Wolfgang, to Robert Bosch GmbH. Regulator for a fuel injection pump. 3,942,498, Cl. 123-140.00R.

Ehret, Yale W.; and Frey, Robert A., to Adams & Westlake Company, The. Hinged window with quick release bar. 3,942,286, Cl. 49-141.000.

Eifler, Willi: *See—*
Dietrich, Werner; Wagner, Kuno; and Eifler, Willi, 3,943,158.

Eisai Co., Ltd.: *See—*
Takahashi, Toshio; Tagaya, Ryosaku; and Ehara, Toshiyasu, 3,942,897.

Eisele, Hermann; and Stumpp, Gerhard, to Robert Bosch GmbH. Fuel injection system. 3,942,496, Cl. 123-139.0AW.

Ekstrand, John Arne Ingemund. Optical sighting instrument with means for producing a sighting mark. 3,942,901, Cl. 356-251.000.

Electricite de France: *See—*
Abel, Patrice; Duverne, Pierre; Elziere, Jean-Bernard; and Reffye, Jerome Verchere de, 3,943,349.

Elektro-Thermit GmbH.: *See—*
Guntermann, Hans, 3,942,579.

Elfving, Sven T.; and Elfving, Thore M. Thermoelectric assembly and thermoelectric couples and subcouples therefor. 3,943,553, Cl. 357-28.000.

Elfving, Thore M.: *See—*
Elfving, Sven T.; and Elfving, Thore M., 3,943,553.

Eli Lilly and Company: *See—*
Aronson, Theodore F., 3,942,645.
Ryan, Charles W.; and Blanchard, William B., 3,943,126.

Ellingson, Dennis L.: *See—*
Smith, Gerald C.; Ellingson, Dennis L.; Johnson, Colin A.; and Rhee, Seong K., 3,943,323.

Elliott Brothers (London) Limited: *See—*
Pudsey, David Graham, 3,943,509.

Ellis, Gwynn Pennant; Collins, Ian; Waters, David Martin; and Bays, David Edmund, to Allen & Hanburys Limited. Tetrazolyl containing naphthyridine 3-carboxamides. 3,943,141, Cl. 260-295.50B.

Ellis, Robert J.; Shepherd, Lawrence H., Jr.; and Starrett, Richmond M., to Ethyl Corporation. Bisulfite reaction with olefins. 3,943,174, Cl. 260-513.00B.

Ellsworth, Eric D., to Ford Motor Company. Fuel flow shut-off valve. 3,942,504, Cl. 123-198.0DB.

Elmer, James W., to Inventors Engineering, Inc. Continuous motion assembly machine with rotary assembly motion. 3,942,236, Cl. 29-208.00R.

Elmore, J. Russell, to Torrington Company, The. Overrunning clutch and retainer. 3,942,616, Cl. 192-45.000.

Eltze, Georg: *See—*
Forster, Hans-Joachim M.; Eltze, Georg; and Steinbrenner, Hans, 3,942,393.

Elziere, Jean-Bernard: *See—*
Abel, Patrice; Duverne, Pierre; Elziere, Jean-Bernard; and Reffye, Jerome Verchere de, 3,943,349.

Emerson Electric Co.: *See—*
Cunningham, Donald M., 3,943,328.

Emmons, Donald Earl: *See—*
Steger, Werner Thomas; Glynn, Brian; and Emmons, Donald Earl, 3,942,212.

Energy Research Corporation: *See—*
Baker, Bernard; and Klein, Martin, 3,943,006.

Enever, James A., to British Railways Board. Carbon fibre composites. 3,943,090, Cl. 260-37.0EP.

Engel, Simon L.; and McFall, Robert A., to Caterpillar Tractor Co. Apparatus for modulating a high energy beam. 3,942,878, Cl. 350-274.000.

Engelhard Minerals & Chemicals Corporation: *See—*
Rizzolo, Silvio J., 3,942,242.
Swanson, David B.; and Haden, Walter L., Jr., 3,943,233.

Engle, Donald W., to Clevepak Corporation. Reinforced container divider. 3,942,837, Cl. 229-15.000.

English, David L.: *See—*
Kuno, Hiromu J.; and English, David L., 3,943,463.

Engstrom, Carl Bengt Alfred; Klang, Hans Georg; and Persson, Gosta, to EUROC Administration AB. Method for producing foamed ceramics. 3,942,990, Cl. 106-40.00R.

Entreprise de Recherches et D'Activities Petrolieres Elf: *See—*
Amblard, Jean-Claude, 3,943,363.

Environmental Developers, Inc.: *See—*
Sheldon, Norman A.; and Dosch, Erwin L., 3,943,289.

Erickson, Gustav F., to UMC Industries, Inc. Coin-handling device. 3,942,542, Cl. 133-1.00R.

Ericsson, Lennart, to Trans-Consultants Aktiebolag. Ship hull and a method of assembling the same. 3,942,460, Cl. 114-77.00R.

Ernest Scragg & Sons Limited: *See—*
Waterhouse, George; and Parker, Walter, 3,943,222.

Erno Raumfahrttechnik: *See—*
Dinglinger, Wolfgang; and Rolf, Eckard, 3,942,456.

Ernstoff, Michael N.: *See—*
Keller, Bruce W.; and Ernstoff, Michael N., 3,943,281.

Ernthausen, Roger E., to Owens-Illinois, Inc. Gaseous discharge display/memory panel with dielectric layer. 3,943,394, Cl. 313-201.000.

Erspamer, James R., to Sperry Rand Corporation. Index error correction for flux valve heading repeater system. 3,942,257, Cl. 33-361.000.

Ervin, John W. Solid state four-wire switch for key telephones. 3,943,301, Cl. 179-99.000.

Erwin Sick Optik-Elektronik: *See—*
Sillmann, Manfred, 3,942,276.

ESB Incorporated: *See—*
Honer, Harold Nickolas; Malaspina, Francis P.; and Martini, William J., 3,943,004.
Scheuerle, Robert F.; and Vinkler, John F., 3,943,002.

Escher Wyss GmbH: *See—*
Christ, Alfred; Heinbockel, Wolfgang; Kahmann, Albrecht; Muller, Karl; and Kohrs, Manfred, 3,942,728.

Espinola, James R.: *See—*
Nelson, Edgar L.; and Espinola, James R., 3,942,646.

Esposito, Andrew M.: *See—*
Palmieri, Joseph M., 3,942,718.

Esquire, Inc.: *See—*
Lundy, Jack W., 3,943,355.

Etablissements A. Gregoire & Barilleau: *See—*
de Villemeur, Philippe, 3,942,855.

Etablissements Francois Salomon et Fils: *See—*
Salomon, George Pierre Joseph, 3,942,811.

Ethicon, Inc.: *See—*
Hunter, Alastair Wilson; and Thompson, Darrell R., 3,942,532.

Ethyl Corporation: *See—*
Ellis, Robert J.; Shepherd, Lawrence H., Jr.; and Starrett, Richmond M., 3,943,174.

Etter, Robert J.: *See—*
Johnson, Virgil E., Jr.; Etter, Robert J.; Lain, Horton W.; Stephens, Larry K.; and Van Dyke, Peter, 3,942,463.

Eue, Ludwig: *See—*
Wagner, Klaus; Eue, Ludwig; Schmidt, Robert R.; and Roos, Ernst, 3,943,180.

EUROC Administration AB: *See—*
Engstrom, Carl Bengt Alfred; Klang, Hans Georg; and Persson, Gosta, 3,942,990.

Evans, Francis E.: *See—*
Berenbaum, Morris B.; Gilleo, Kenneth B.; and Evans, Francis E., 3,943,100.

Evans, Norol T.; and Hyneman, Richard F., to Hughes Aircraft Company. Spike enable circuit. 3,943,511, Cl. 343-7.00A.

Everly, John W.; and Todd, Barry S., to United States of America, Navy. Digital memory area correlation tracker. 3,943,277, Cl. 178-6.800.

Evers, William J.; and Sieczkowski, Joseph, to International Flavors & Fragrances Inc. Novel flavoring compositions and processes. 3,942,537, Cl. 131-17.00R.

Excel Corporation: *See—*
Furlette, James L.; and Stadler, Donald A., 3,942,338.

Expert N.V.: *See—*
Vissers, Herbert, 3,942,644.

Exxon Research & Engineering Co.: *See—*
Deaver, Royce D., 3,942,560.
Kmak, Walter S.; and Yates, David J. C., 3,943,052.
Li, Norman N., 3,942,527.
Schutze, Henry G.; and Wilder, Hulen L., 3,943,227.

Fabbri, Dante: *See—*
Koehm, Ronald E.; and Fabbri, Dante, 3,942,500.
Kunik, I. Jordan; Koehm, Ronald E.; and Fabbri, Dante, 3,942,499.

Fabrica Espanola Magnetos, S.A.: *See—*
Galvache, Francisco Javier Lanzas, 3,943,405.

Fabriksaktiebolaget EKA: *See—*
Markoo, Eric L.; Strand, Tore G. H.; and Sandell, Thorsten W., 3,942,959.

Fadiga, Dario J.; and Soderman, Reynaldo C. T., to Quality Research Engineering Corporation. Automatic contour-conforming support pallet. 3,942,778, Cl. 269-26.000.

Fahlstrom, Per Anders Herman Henningsson; and Jonsson, Erik Alfon, to Boliden Aktiebolag. Grinding plant. 3,942,727, Cl. 241-34.000.

Fairchild Camera and Instrument Corporation: *See—*
Kim, Choong-Ki, 3,943,545.
Long, David K., 3,943,376.

Falk, Alfons O., to Morgardshammar Aktiebolag. Table feeder. 3,942,628, Cl. 198-220.0DA.

Farmer, Robert, III; Lawson, Jimmie B.; and Sawyer, Webster M., Jr., to Shell Oil Company. Heat-stable calcium-compatible waterflood surfactant. 3,943,160, Cl. 260-458.000.

Fasnacht, Dennis W. Reading scroll machine. 3,942,275, Cl. 40-31.000.

Fassett, Matthew, to Raytheon Company. Airborne multi-mode radiating and receiving system. 3,943,523, Cl. 343-854.000.

Favier, Michel, to Swiss Aluminium Ltd. Heat convector for use in buildings. 3,942,587, Cl. 165-129.000.

Favreau, Michel: *See—*
d'Auria, Luigi; Chevalier, Guy; Favreau, Michel; Huignard, Jean Pierre; Lacotte, Jean Pierre; and Puech, Claude, 3,943,559.

Fay, James P. Mount for hospital communications system. 3,942,751, Cl. 248-280.000.

Federal Business Products, Inc.: *See—*
Wise, Lester V., 3,942,714.

Federal Paper Board Company, Inc.: *See—*
Sutherland, Robert L.; and Naumann, Frederick E., 3,942,631.

Fehlmann, Wolfgang: *See—*
Eheim, Franz; and Fehlmann, Wolfgang, 3,942,498.

Fehr, Henri, to Sulzer Brothers Limited. Electromagnetic coupler having an electromagnetic winding. 3,943,391, Cl. 310-103.000.

Fehrenbach, Karl Heinz; Holl, Ludwig; and Grunewald, Eberhard L., to Becker Flugfunwerk GmbH. Control for navigation receivers, radio compasses, radio, and aircraft telephony, transponders and the like. 3,943,308, Cl. 200-18.000.

Feinberg, Irving: *See—*
Gehrie, Charles S.; and Feinberg, Irving, 3,942,344.

Feldman, Martin; and Moran, Joseph Michael, to Bell Telephone Laboratories, Incorporated. Control of scanning laser beam. 3,943,529, Cl. 346-108.000.

Fell, Ferol S.: *See—*
Case, Cecil L.; Fell, Ferol S.; and Burkhart, Merle K., 3,942,602.

Feniak, George, to Polysar Limited. Process for minimizing heat-promoted interaction between brominated butyl and carbon black during compounding. 3,943,093, Cl. 260-42.000.

Fenn, Robert W., III; and O'Leary, Kevin J., to Diamond Shamrock Corporation. Method for treating sewage water. 3,943,044, Cl. 204-149.000.

Ferlazzo, Natale: *See—*
Antonelli, Giambattista; Ferlazzo, Natale; and Aglietti, Giancarlo, 3,943,069.

Ferranti Limited: *See—*
Jackson, Sydney; and Shepherd, Alan Arthur, 3,942,245.

Ferranti-Packard Limited: *See—*
Winrow, Donald, 3,942,274.

Ferrara, Peter J. Alkylene oxide modified cereal flours and process of preparing the same. 3,943,000, Cl. 127-33.000.

Ferro Corporation: *See—*
Fry, Ralph, 3,942,470.

Ferrograph Company Limited: *See—*
Bailey, Arthur Raymond, 3,943,293.

Fiala, Ernst: *See—*
Schwanz, Wilfried; Fiala, Ernst; Warnecke, Rolf; and Buchholz, Peter, 3,942,819.

Fiber Science, Inc.: *See—*
Ashton, Larry J.; Abildskov, Dale P.; and Yao, Samuel S., 3,943,020.

Filonov, Viktor Sergeevich: *See—*
Aristarkhov, Nikolai Nikolaevich; Efimov, Igor Alexandrovich; Zaitsev, Boris Ivanovich; Peters, Iskra Genrikhovna; Tymosh, Boris Severianovich; Filonov, Viktor Sergeevich; Sharov, Alexei Lavrentievich; Shildin, Alexei Ivanovich; Balashova, Galina Stepanovna; Bets, Nikolai Ivanovich; Skvortsov, Stanislav Alexandrovich; Yakovleva, Valentina Stepanovna; Zhuchkov, Ivan Ilich; Gorjunov, Vladimir Sergeevich; Petrov, Vladimir Alexeevich; Kevrolev, Vladimir Petrovich; Rybakov, Valery Nikolaevich; and Tverdovsky, Ninel Dmitrievich, 3,943,365.

Finlayson, Allan T.: *See—*
O'Reilly, Dorothy F.; Byrd, James J.; and Finlayson, Allan T., 3,943,531.

Finn Equipment Company, The: *See—*
Keyes, Richard E.; and Lingert, Ralph E., 3,942,457.

Finn, William W. Dispenser carton and method of manufacture. 3,942,417, Cl. 93-49.00M.

Firestone Tire & Rubber Company, The: *See—*
Kyker, Gary Stephen; and Antkowiak, Thomas Anthony, 3,943,088.
Lawrence, James Philip; and Gardner, James Dennis, 3,942,573.

Firmenich & Cie: *See—*
Winter, Max; Goldman, Irving M.; Gautschi, Fritz; Flament, Ivon; and Stoll, Max, 3,943,260.

Fisch, Richard S.: *See—*
Newman, Norman; and Fisch, Richard S., 3,942,985.

Fischer & Porter Co.: *See—*
Kazahaya, Masahiro, 3,943,488.

Fischetti, Joseph W.: *See—*
Andress, Otto G.; Fischetti, Joseph W.; Renzi, Anthony J.; and Ryan, Francis D., 3,942,804.

Fish, Harold D.: *See—*
Kalberer, Karl H., Jr.; and Fish, Harold D., 3,943,410.

Fishbein, John; Bell, Raymond William Henry; Clarke, Anthony James; and Merriman, Peter, to Dunlop Holdings Limited. Polyurethane foams. 3,943,075, Cl. 260-2.5AW.

Fisher, Gordon L.; and Cupp, Calvin R., to International Nickel Company, Inc., The. Powder anode. 3,943,048, Cl. 204-290.00R.

Fishman, Norman; and Parkinson, Dean B., to Stanford Research Institute. Fire resistant vinyl resin with metal salt of phenolic resin. 3,943,188, Cl. 260-847.000.

Fishwick, John Henry; and Dahlen, Emile O., to Foote Mineral Company. Process for making iron or steel utilizing lithium containing material as auxiliary slag formers. 3,942,977, Cl. 75-30.000.

Fitterer, Horst; Woweries, Uwe; Loewenberg, Gustav; and Gaiser, Dieter, to BASF Aktiengesellschaft. Magnetic tape cartridge. 3,942,744, Cl. 242-199.000.

Flagel, Clarence E. Minnow harness for fishing. 3,942,282, Cl. 43-44.200.

Flament, Ivon: *See—*
Winter, Max; Goldman, Irving M.; Gautschi, Fritz; Flament, Ivon; and Stoll, Max, 3,943,260.

Flannery, James E., to Corning Glass Works. Chemically resistant silicate glass. 3,942,992, Cl. 106-52.000.

Fleischer, Joachim: *See—*
Deussner, Herbert; and Fleischer, Joachim, 3,942,942.

Fleischer, Jurgen; Bauer, Kurt; and Hopp, Ruldolf, to Haarmann & Reimer Gesellschaft mit beschrankter Haftung. Separating optically pure *d-l*-isomers of menthol, neomenthol and isomenthol. 3,943,181, Cl. 260-631.00R.

Fleischman, Andor A., to Bell & Howell Company. Short focal length Petzval-type optical system. 3,942,877, Cl. 350-220.000.

Fleissner, Hans, to Vepa Aktiengesellschaft. Process and apparatus for the formation of loops of textile material in a treatment chamber. 3,942,695, Cl. 226-1.000.

Fleming, Raymond D.: *See—*
Wittenbrook, Lawrence S.; Timmons, Richard J.; and Fleming, Raymond D., 3,942,973.

Flohrs, Peter; and Schafer, Horst, to Semikron Gesellschaft fur Gleichrichterbau und Elektronik m.b.H. Semiconductor element. 3,942,244, Cl. 29-590.000.

Florens, Raymond Leopold, to AGFA-GEVAERT, N.V. Photographic element comprising a fogged, direct-positive heterodispersed silver halide emulsion and a fogged, direct-positive monodispersed silver halide. 3,942,986, Cl. 96-68.000.

Florian, John, to Mobil Oil Corporation. Carry-out tray. 3,942,671, Cl. 220-23.800.

Fluder, Chester H.; and Heeney, Matthew R., to Vapor Corporation. Latch relay with electrical reset. 3,943,475, Cl. 335-161.000.

Flying Dutchman, Inc.: *See—*
Lepley, James W., 3,942,656.

Flynn, Edward W. Glass washer and conditioner. 3,942,545, Cl. 134-46.000.

Fogel, Arnold W.; and Mercurio, Anthony F., to American Cyanamid Company. Deodorant composition containing a quaternary ammonium saccharinate salt. 3,943,242, Cl. 424-65.000.

Foley, Kevin M.: *See—*
Bell, Reuben H.; and Foley, Kevin M., 3,943,076.

Fontana, Anthony J.: *See—*
Louderback, Allan L.; and Fontana, Anthony J., 3,943,364.

Foote Mineral Company: *See—*
Fishwick, John Henry; and Dahlen, Emile O., 3,942,977.

Force, Carlton G., to Westvaco Corporation. Process for improving tall oil pitch. 3,943,117, Cl. 260-97.500.

Ford Motor Company: *See—*
Ellsworth, Eric D., 3,942,504.
Oliver, Wilfred T., 3,943,205.
Schubeck, Phillip A., 3,943,206.
Scott, Donald H., 3,942,490.
Westerdale, Paul A., 3,942,385.

Fordice, Michael W.: *See—*
Christensen, Burton G.; Fordice, Michael W.; and Johnston, David B. R., 3,943,153.

Forenade Fabriksverken: *See—*
Johansson, Lennart Nils; and Gronvall, Ragnar Karl Olof, 3,942,324.

Forster, Hans-Joachim M.; Eltze, Georg; and Steinbrenner, Hans, to Daimler-Benz Aktiengesellschaft. Device for the control of shifting members of automatic change-speed transmissions. 3,942,393, Cl. 74-866.000.

Foseco International Limited: *See—*
Hazlehurst, Ian, 3,942,580.
Neu, Max Gerhard; and Murcott, Arthur William, 3,943,270.

Foster, Allen, to Clark Technical Incorporated. Down-loading device. 3,942,840, Cl. 302-3.000.

Foster Wheeler Energy Corporation: *See—*
Barratt, Robert O.; Poicer, John; and Swift, Richard James, 3,942,482.

Foyle, Russell M.: *See—*
Sherer, C. Richard; and Foyle, Russell M., 3,942,248.

Fr. Hesser Maschinenfabrik AG: *See*—
Domke, Klaus, 3,942,301.

Fraioli, Anthony V.: *See*—
Frazee, Lawrence E.; and Fraioli, Anthony V., 3,943,557.

Frank, Edward J.; and Freeman, John M., to Bliss & Laughlin Industries Incorporated. Caster brake assembly. 3,942,608, Cl. 188-1.00D.

Frank, Egon; and Steiger, Klaus, to Loewe-Opta GmbH. Track scan initiation and cutout arrangement for a helical scan video recorder. 3,943,565, Cl. 360-70.000.

Frank Mayer & Associates, Inc.: *See*—
Crossien, Louis John, 3,942,647.

Frank, Pierre: *See*—
Sailer, Andre Louis; and Frank, Pierre, 3,943,122.

Frank, Ulrich Anton, to Hoffmann-La Roche Inc. Respiratory distress stimulator system. 3,942,513, Cl. 128-2.00R.

Frankland, John David: *See*—
Cordrey, Philip William; Frankland, John David; and Highgate, Donald James, 3,943,045.

Franklin, James W. Rollerway for handling molding apparatus. 3,942,618, Cl. 193-35.00R.

Frappe, Pierre, to Verdol S.A. Method and apparatus for the photoelectrical reading-in weaving designs. 3,943,422, Cl. 318-568.000.

Frazee, Lawrence E.; and Fraioli, Anthony V., to Plessey Incorporated. Semiconductor package with integral hermeticity detector. 3,943,557, Cl. 357-75.000.

Fredriksson, Borje Ingemar, to SCA Projekt Aktiebolag. Device for supplying treatment agent to ligno-cellulose containing material. 3,942,729, Cl. 241-38.000.

Fredsted, Tage: *See*—
Kroyer, Karl Kristian Kobs; Fredsted, Tage; and Brocks, Gunnar, 3,942,966.

Freeman, John M.: *See*—
Frank, Edward J.; and Freeman, John M., 3,942,608.

Freestone, Harry T., to General Electric Company. Picture level control with compatible automatic chroma control. 3,943,560, Cl. 358-27.000.

Frehn, Fritz, to Deutsche Edelstahlwerke Aktiengesellschaft. Sintering steel-bonded carbide hard alloy. 3,942,954, Cl. 29-182.700.

Freudenstein, Georg: *See*—
Grosch, Karl Alfred; Senger, Gerhard Franz-Josef; and Freudenstein, Georg, 3,942,370.

Frey, Robert A.: *See*—
Ehret, Yale W.; and Frey, Robert A., 3,942,286.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See*—
Hoffmann, Herbert, 3,942,733.

Friedel, William C., Jr.; Dietz, Charles F.; and Marshall, Lowell K., to University of California, The Regents of the. Tomato harvester. 3,942,590, Cl. 171-5.000.

Fries, Paul, to Siemens Aktiengesellschaft. Cooling arrangement for flat semiconductor components. 3,942,586, Cl. 165-105.000.

Frink, Russell E., to Westinghouse Electric Corporation. Motion-multiplying linkage-mechanism for sealed-casing structures. 3,943,314, Cl. 200-148.00A.

Fritz, Dieter: *See*—
Winkler, Bruno; Mangei, Bernd; and Fritz, Dieter, 3,943,262.

Fritze, Helmut; and Hultzsch, Kurt, to Hoechst Aktiengesellschaft. Process for preparing modified copolymers. 3,943,111, Cl. 260-78.40D.

Frotschner, Eberhardt K., to Daimler-Benz Aktiengesellschaft. Hydrodynamic brake, especially for motor vehicles. 3,942,613, Cl. 188-296.000.

Fry, Ralph, to Ferro Corporation. Dry process enamel apparatus for bathtubs. 3,942,470, Cl. 118-310.000.

Fuji Photo Film Co., Ltd.: *See*—
Asano, Yoshio, 3,943,535.
Oshima, Shigeru, 3,943,536.
Sato, Masamichi, 3,942,981.
Tamai, Yasuo; Aonuma, Masashi; Nakamura, Matsuaki; Agawa, Hiroshi; and Akashi, Goro, 3,943,012.

Fujii, Kouki, to Sanraku-Ocean Co., Ltd. Oligoethylenepiperazines. 3,943,135, Cl. 260-268.0PL.

Fujita, Kinji, to Kabushiki Kaisha Suwa Seikosha. Time correction device for digital indication electronic watch. 3,942,318, Cl. 58-85.500.

Fujita, Yoshio: *See*—
Yamaguchi, Takashi; Abe, Yasuo; and Fujita, Yoshio, 3,943,239.

Fujitani, Yoshitomo: *See*—
Hirai, Kazumi; and Fujitani, Yoshitomo, 3,943,319.

Fujitsu Limited: *See*—
Tamai, Masaharu; and Tanaka, Shigeo, 3,943,490.

Fujiwara, Takao: *See*—
Kurita, Takaji; and Fujiwara, Takao, 3,942,889.

Fukao, Masami: *See*—
Suzukamo, Gohu; Fukao, Masami; Nagase, Tsuneyuki; and Toshioka, Horosuke, 3,943,167.

Fukushima, Mitsuru: *See*—
Morishita, Masataka; Inaba, Yoshihito; Fukushima, Mitsuru; Kobari, Sadami; Nagata, Akiho; and Abe, Jinnosuke, 3,943,063.

Fukushima, Osamu: *See*—
Honjo, Satoru; and Fukushima, Osamu, 3,942,266.

Funatsu, Kunio: *See*—
Shibata, Morio; Sawamura, Fujio; and Funatsu, Kunio, 3,943,421.

Furkert, Herbert, to Chemiebau Dr. A. Zieren GmbH & Co. KG. Production of sulfuric acid from the scrubbing solution obtained in the desulfurization of coke-oven gas. 3,943,237, Cl. 423-542.000.

Furlette, James L.; and Stadler, Donald A., to Excel Corporation. Torque limiting coupling. 3,942,338, Cl. 64-30.00D.

Furukawa, Hiroshi; and Tajima, Akira, to Canon Kabushiki Kaisha. Image stabilizing optical system having a variable prism. 3,942,862, Cl. 350-16.000.

Fusey, Pierre, to Banque Pour L'Expansion Industrielle "Banexi". Preparation of composition for making hydrocarbon and fats into biodegradable emulsions. 3,943,066, Cl. 252-356.000.

G. D. Searle & Co.: *See*—
Schulman, Joseph H., 3,942,535.

G&H Technology, Inc.: *See*—
Phillips, John J.; and Clark, Thomas A., 3,942,227.

Gaetani, Bruno: *See*—
Arrigoni, Virgilio; Gaetani, Bruno; and Ghezzi, Pietro, 3,942,359.

Gagneux, Andre; Heckendorn, Roland; and Meier, Rene, to Ciba-Geigy Corporation. 6-Phenyl-4H-v-triazolo[1,5-a][1,4]benzodiazepines. 3,943,145, Cl. 260-308.00A.

Gagniere, Claude, to Charbonnages de France. Electric device for numerical measurement of a magnitude by a pulse counter. 3,943,338, Cl. 235-92.0PL.

Gaiser, Dieter: *See*—
Fitterer, Horst; Woweries, Uwe; Loewenberg, Gustav; and Gaiser, Dieter, 3,942,744.

Gall, Richard C., to Oak Industries Inc. Plural storage system. 3,943,492, Cl. 340-172.500.

Gallatin, Robert A., to Process Systems, Inc. Digital fluid flow control system with trim adjustment. 3,942,553, Cl. 137-599.000.

Gallington, Roger W. Diaphragm type angle of attack indicator. 3,942,376, Cl. 73-180.000.

Galvache, Francisco Javier Lanzas, to Fabrica Espanola Magnetos, S.A. System of capacitive discharge ignition for automobile vehicles with a converter governed by a multi-vibrator. 3,943,405, Cl. 315-209.0CD.

Gand, Heinz: *See*—
Passera, Walter, deceased; and Gand, Heinz, 3,942,759.

Gandi, Robert A.; Martino, Anthony P.; and Pellegrino, Robert G., to Becton, Dickinson & Company. Two compartment sterilant package. 3,942,634, Cl. 206-210.000.

Gardner-Denver Company: *See*—
Boucher, Harry, 3,942,742.

Gardner, James Dennis: *See*—
Lawrence, James Philip; and Gardner, James Dennis, 3,942,573.

Garlic, Richard A., to Xerox Corporation. Microprocessor with immediate and indirect addressing. 3,943,495, Cl. 340-172.500.

Garrett, William, to General Kinetronics. Heating device. 3,942,510, Cl. 126-263.000.

Garris, Charles R., to SmithKline Corporation. Quality control monitor for medicinal capsule packaging apparatus. 3,942,900, Cl. 356-237.000.

Gassmann, Horst: *See*—
Unbehaun, Olaf; Hampel, Uwe; Scholz, Norbert; Gassmann, Horst; Schneider, Walter; Hesser, Heinz; Herrmann, Walter; and Bechert, Bertold, 3,942,448.

Gassner, Hans; Thielemann, Max; and Schuster, Friedrich, to Kugelfischer Georg Schafer & Co. False twister. 3,942,313, Cl. 57-77.400.

Gatrun Anstalt: *See*—
Bory, Jacques, 3,942,299.

Gause, Lawrence J. Hairbrush with retractable handle and mirror. 3,942,540, Cl. 132-85.000.

Gauthier, Michel: *See*—
Seite, Guy; and Gauthier, Michel, 3,942,491.

Gautschi, Fritz: *See*—
Winter, Max; Goldman, Irving M.; Gautschi, Fritz; Flament, Ivon; and Stoll, Max, 3,943,260.

Gay, Michel: *See*—
Bakassian, Georges; Gay, Michel; and Lefort, Marcel, 3,943,099.

Gebel, Iosif Davydovich; Zykov, Arkady Alexandrovich; Nefedov, Askold Ivanovich; Parshikov, Viktor Ivanovich; and Khrolenko, Viktor Fedorovich. Device for measuring deviation of the normal section profile of a part from the round shape. 3,942,253, Cl. 33-178.00D.

Gebelius, Sven Runo Vilhelm. Method for the attachment of tubular pipe connection means to a sheet metal Wall and a device according to the method. 3,942,240, Cl. 29-512.000.

Gehrie, Charles S.; and Feinberg, Irving, to Presto Lock Company, Division of Walter Kidde & Company, Inc. Combination lock. 3,942,344, Cl. 70-70.000.

Gelenkwellenbau GmbH: *See*—
Schultenkamper, Josef, 3,942,336.

Gemmell, Frank S.: *See*—
Eberhard, Everett; Gemmell, Frank S.; and Moore, Randolph G., 3,943,513.

General Battery Corporation: *See*—
Eberle, William J., 3,942,704.

General Cable Corporation: *See*—
Bahder, George; Eager, George S., Jr.; and Silver, David A., 3,943,271.

General Dynamics Corporation: *See*—
Carter, Glenn T.; and Paniszczyn, Thomas F., 3,942,746.

General Electric Co.: *See*—
Andress, Otto G.; Fischetti, Joseph W.; Renzi, Anthony J.; and Ryan, Francis D., 3,942,804.
Aycock, David F., 3,943,166.
Barbay, Michael R., 3,942,705.
Cooper, Glenn D.; and Abolins, Visvaldis, 3,943,191.
Degenhart, Thomas Wayne, 3,943,416.
DeJarnette, Malcolm B., 3,943,435.
Freestone, Harry T., 3,943,560.
Grimm, Bernard J.; and Boughton, Stephen G., 3,942,853.

Honda, Thomas Shaw; and Ringwall, Carl Gustave, 3,942,558.
Hussar, Joseph Paul; and Jolie, Ralph Albert, 3,942,741.
Kennedy, Richard W.; and Tefft, Edward G., 3,943,013.
Marcotte, Raymond L., 3,943,016.
Prober, Maurice; and Vostovich, Joseph Edward, 3,942,937.
Sang, Henry W., 3,942,341.
Sawyer, Thomas F., 3,942,581.
Schaeffer, Robert L.; and Toft, Kaj, 3,942,706.
Shackford, Ernest B., 3,943,441.
Sisler, Robert R.; and Helfrich, Robert C., 3,942,265.
Vestergaard, Jorgen H.; and Ragsdale, Gary W., 3,943,101.
Whidden, James R., 3,943,428.

General Electric Company Limited, The: *See—*
Stevenson, Robert Andrew, 3,943,300.

General Foods Corporation: *See—*
Bahoshy, Bernard J.; Klose, Robert E.; and Nordstrom, Harold A., 3,943,258.
Halik, Joseph John; Pitchon, Esra; Schulman, Marvin; Schwarz, Milton H.; and Yezek, Milton, 3,943,266.
Steensen, Wayne L.; and Saladini, Joseph J., 3,943,265.

General Kinetronics: *See—*
Garrett, William, 3,942,510.

General Machine Industries Corporation: *See—*
Goff, Lawrence J., 3,942,431.

General Mills, Inc.: *See—*
Anderson, Ray H.; and Saari, Albert L., 3,943,241.

General Motors Corporation: *See—*
Eckhardt, Dennis C.; Dunlap, Michael A.; and Hoppe, Robert A., 3,942,321.

General Refractories Company: *See—*
Bakker, Wate Thewis, 3,943,216.

Gentry, Charles B., to Granco Equipment, Inc. Fume incinerator and seal structure therefor. 3,942,953, Cl. 23-277.00C.

George, Anthony Joseph. Backhoe attachment. 3,942,271, Cl. 37-117.500.

George, Nicholas, to California Institute of Technology. Full view hologram. 3,942,861, Cl. 350-3.500.

George, Roger Geoffrey: *See—*
Brewster, Arthur Edward; Weir, Donald Adams; Watson, Christopher Alan; George, Roger Geoffrey; and Phillips, Michael James, 3,943,489.

Gepfer, Richard E., to Clevepak Corporation. Stabilized container divider. 3,942,709, Cl. 229-15.000.

Gerber, Arthur H., to Horizons Incorporated, a division of Horizons Research Incorporated. Substituted tetraamino heterocyclic compounds, useful in the preparation of substituted polybenzimidazoles and poly-imidazopyrrolones. 3,943,125, Cl. 260-240.00D.

Gerber Garment Technology, Inc.: *See—*
Gerber, Heinz Joseph, 3,942,411.
Gerber, Heinz Joseph, 3,942,781.

Gerber, Heinz Joseph, to Gerber Garment Technology, Inc. Rotary cutting apparatus. 3,942,411, Cl. 90-11.00A.

Gerber, Heinz Joseph, to Gerber Garment Technology, Inc. Penetrable support. 3,942,781, Cl. 269-289.00R.

Gerlach, Pierre, to Thomson-CSF. Electronic tube with cylindrical electrodes. 3,943,398, Cl. 313-341.000.

Gershanov, Gennady Khaimovich: *See—*
Berzin, Albert Yazepovich; Buslovich, Solomon Leibovich; Bush, Gunar Yanovich; Gershanov, Gennady Khaimovich; Zhagars, Aivar Alfredovich; Kalognomos, Viktor Ivanovich; Sokolov, Georgy Kondratievich; Chervinsky, Jury Konstantinovich; and Yakovich, Zigmund Yazepovich, 3,943,505.

Gertz, Albert E. Male connector plug with improved switch mechanism. 3,943,310, Cl. 200-51.00R.

Getgen, Lawrence E., to GTE Automatic Electric Laboratories Incorporated. Digital logic circuits for producing digital sum and difference frequencies. 3,943,454, Cl. 328-133.000.

Ghezzi, Pietro: *See—*
Arrigoni, Virgilio; Gaetani, Bruno; and Ghezzi, Pietro, 3,942,359.

Ghyselen, Jean L. J. E.: *See—*
Dompas, John M.; Ghyselen, Jean L. J. E.; and Mortier, Rene E. J., 3,942,582.

Giangiulio, Clayton E. Onion slicing machine. 3,942,399, Cl. 83-4.000.

Giese, Peter: *See—*
Hagen, Reinold; Giese, Peter; and Klusener, Peter, 3,942,677.

Gilbert, Dixie E., to Phillips Petroleum Company. Sealing parisons using preblow and contoured sealing surface. 3,942,932, Cl. 425-324.00B.

Gill, Geoffrey; Pratt, Donald W.; and Green, Bryant W., to Muskegon Tool Industries. Trepanning and boring tool. 3,942,905, Cl. 408-204.000.

Gilleo, Kenneth B.: *See—*
Berenbaum, Morris B.; Gilleo, Kenneth B.; and Evans, Francis E., 3,943,100.

Ginzburg, Arkady Savelievich; Gurevich, Genrikh Georgievich; Kirshtein, Generik Khaimovich; Kvasnevsky, Igor Porfirievich; Yakushonok, Vladimir Ivanovich; and Levin, Mikhail Naumovich. Electromagnetic flowmeter. 3,942,377, Cl. 73-194.0EM.

Girard, Maurice Victor, to British Ceca Company Limited, The; and Croftshaw (Engineers) Limited, part interest to each. Apparatus and methods for contacting gases or vapours with particulate solid material. 3,942,960, Cl. 55-74.000.

Girardin, Roger: *See—*
Lehmann, Hans; Girardin, Roger; Morf, William; and Delpretti, Roger, 3,943,322.

Givaudan Corporation: *See—*
Helmlinger, Daniel; and Naegeli, Peter, 3,943,177.
Naegeli, Peter, 3,943,073.

GKN Somerset Wire Limited: *See—*
Cahill, Terence, 3,942,309.

Glasrock Products, Inc.: *See—*
Dickey, Clarence A.; and McDaniel, John E., 3,942,903.
Dickey, Clarence A.; and Smoot, Thomas W., 3,943,211.

Glenn, James J., Jr., to N L Industries, Inc. Apparatus for the determination of the quantity of oil. 3,942,374, Cl. 73-155.000.

Glennie, Brian L., to Minnesota Mining & Manufacturing Company. Package for endless belts. 3,942,637, Cl. 206-389.000.

Globe-Union Inc.: *See—*
Hipp, Julius Carl, 3,943,009.

Glorieux, Jean-Marie: *See—*
Lepage, Jean-Paul; and Glorieux, Jean-Marie, 3,942,395.

Glynn, Brian: *See—*
Steger, Werner Thomas; Glynn, Brian; and Emmons, Donald Earl, 3,942,212.

Glynn, Thomas W.; and James, J. Michael, to Cyborg Corporation. Biofeedback training method and system. 3,942,516, Cl. 128-2.10B.

Gnosjoplast AB: *See—*
Lind, Roland, 3,942,205.

Go, Tadahiro; Yaginuma, Hiroshi; and Inoue, Masaaki, to Nippon Zeon Co., Ltd. Paint compositions containing liquid polymers. 3,942,997, Cl. 106-285.000.

Goff, Lawrence J., to General Machine Industries Corporation. Press having travelling die set. 3,942,431, Cl. 100-53.000.

Goland, Yaacov: *See—*
Ma, James Ju Luan; and Goland, Yaacov, 3,942,758.

Golden, Michael E. Semi-automatic telephone-answering system. 3,943,290, Cl. 179-6.00C.

Goldman, Irving M.: *See—*
Winter, Max; Goldman, Irving M.; Gautschi, Fritz; Flament, Ivon; and Stoll, Max, 3,943,260.

Goodsmith, Dale H.; and Ladouceur, Harold A., to Multifastener Corporation. Fastener installation head. 3,942,235, Cl. 29-208.00D.

Goodyear Tire & Rubber Company, The: *See—*
Bantz, Robert L., 3,942,574.
Bell, Anthony J., 3,943,116.
Cole, Clarence R.; and Duncan, Robert L., 3,942,922.
Kraft, Louis Seelback, 3,942,571.
Saracsan, Jeffrey W., 3,942,672.

Gorjunov, Vladimir Sergeevich: *See—*
Aristarkhov, Nikolai Nikolaevich; Efimov, Igor Alexandrovich; Zaitsev, Boris Ivanovich; Peters, Iskra Genrikhovna; Tymosh, Boris Severianovich; Filonov, Viktor Sergeevich; Sharov, Alexei Lavrentievich; Shildin, Alexei Ivanovich; Balashova, Galina Stepanovna; Bets, Nikolai Ivanovich; Skvortsov, Stanislav Alexandrovich; Yakovleva, Valentina Stepanovna; Zhuchkov, Ivan Ilich; Gorjunov, Vladimir Sergeevich; Petrov, Vladimir Alexeevich; Kevrolev, Vladimir Petrovich; Rybakov, Valery Nikolaevich; and Tverdovsky, Ninel Dmitrievich, 3,943,365.

Gorres, Bruno; Schuldt, Oswald; and van Winsen, Friedrich H., to Daimler-Benz Aktiengesellschaft. Air compressing four cycle reciprocating-piston internal combustion engine. 3,942,502, Cl. 123-195.00R.

Goss, Charles L.: *See—*
Hugelman, Rodney Dale; Kucharchuk, Raymond Anton; and Goss, Charles L., 3,942,649.

Gould, Charna: *See—*
Gould, William; and Gould, Charna, 3,942,931.

Gould, William; and Gould, Charna. Method and apparatus for producing sealing washers. 3,942,931, Cl. 425-304.000.

Gounaris, George D.: *See—*
Huston, Leroy; and Gounaris, George D., 3,943,395.

Gowins, Tim. Baseball batting practice device. 3,942,794, Cl. 273-26.00E.

Granco Equipment, Inc.: *See—*
Gentry, Charles B., 3,942,953.

Gravereaux, Daniel W.; and Budelman, Gerald A., to CBS Inc. Apparatus and method for decoding four channel sound. 3,943,287, Cl. 179-1.0GQ.

Graves, James Marriott: *See—*
Bown, Delos Edward; and Graves, James Marriott, 3,943,539.

Great Lakes Carbon Corporation: *See—*
Whittaker, Mack P.; Miller, Frederick C.; and Grindstaff, Lloyd I., 3,943,213.

Greco, Joseph J.: *See—*
Medow, Norman B.; and Greco, Joseph J., 3,943,251.

Green, Bryant W.: *See—*
Gill, Geoffrey; Pratt, Donald W.; and Green, Bryant W., 3,942,905.

Green, Edward H. Sprayhead for swirling spray. 3,942,725, Cl. 239-468.000.

Green, Ralph V., to Du Pont de Nemours, E. I., and Company. Reforming process for carbon monoxide. 3,943,236, Cl. 423-415.00R.

Green, Robert S., to United States of America, Navy. Cartridge case extracting tool. 3,942,396, Cl. 81-3.050.

Greene, Gordon A., to United States of America, Navy. Variable energy explosive driver. 3,942,444, Cl. 102-70.00R.

Greenwood, Robert C.: *See—*
Crowell, Lee Tyler; Greenwood, Robert C.; and Jones, Thomas E., 3,942,543.

Greenwood, Roger Newton: *See—*
Holliday, Leslie; and Greenwood, Roger Newton, 3,942,961.

Greer, Lucian F. Flush tank valve seat refacer. 3,942,289, Cl. 51-241.0VS.

Grichnik, James J.: *See—*
Schmutzer, Joel J.; Klusendorf, John I.; and Grichnik, James J., 3,943,356.

Griffies, David R.; Robison, Russell O.; and Taylor, Robert W., to Rockwell International Corporation. Saber saw. 3,942,251, Cl. 30-376.000.

Griffin & Company: *See—*
Wilding, Edwin L., 3,942,626.

Grimm, Bernard J.; and Boughton, Stephen G., to General Electric Company. Gasket assembly of a household refrigerator. 3,942,853, Cl. 312-296.000.

Grindstaff, Lloyd I.: *See—*
Whittaker, Mack P.; Miller, Frederick C.; and Grindstaff, Lloyd I., 3,943,213.

Grinshtein, Boris Ilich: *See—*
Tolstov, Jury Georgievich; Skorovarov, Vladimir Efremovich; Grinshtein, Boris Ilich; Stepanova, Valentina Gavrilovna; Bashkatov, Ivan Pavlovich; Vinitsky, Jury Danilovich; Balyasinsky, Valery Ottovich; Zhmurov, Valery Pavlovich; Natalkin, Alexandr Venediktovich; and Lazarev, Grigory Bentsionovich, 3,943,427.

Gronvall, Ragnar Karl Olof: *See—*
Johansson, Lennart Nils; and Gronvall, Ragnar Karl Olof, 3,942,324.

Grosch, Karl Alfred; Senger, Gerhard Franz-Josef; and Freudenstein, Georg, to Uniroyal A.G. Method for determining the preferred direction of rotation of a tire. 3,942,370, Cl. 73-146.000.

Gross, Dario R., to Midland-Ross Corporation. Piston ring assembly. 3,942,808, Cl. 277-197.000.

Grotewohl, Albert: *See—*
Schwenk, Kurt; and Grotewohl, Albert, 3,942,815.

Grove Valve and Regulator Company: *See—*
Brumm, Richard S.; and Parola, Gary D., 3,942,756.

Grumman Aerospace Corporation: *See—*
Bernstein, Joel L.; and Kovach, Paul E., 3,943,312.

Grundig E.M.V. Elektro-Mechanische: *See—*
Opelt, Christian, 3,943,562.

Grune, Horst; and Knipp, Ulrich, to Bayer Aktiengesellschaft. Method for the production of a foam cushion with a covering. 3,943,215, Cl. 264-46.600.

Grunewald, Eberhard L.: *See—*
Fehrenbach, Karl Heinz; Holl, Ludwig; and Grunewald, Eberhard L., 3,943,308.

Gruy, Robert H., to Sofec, Inc. Swivel arrangement for single anchor leg mooring buoy. 3,942,204, Cl. 9-8.00P.

GTE Automatic Electric Laboratories Incorporated: *See—*
Getgen, Lawrence E., 3,943,454.

GTE Laboratories Incorporated: *See—*
Haugsjaa, Paul Osborne; Regan, Robert James; and McNeill, William Henry, 3,943,401.
Haugsjaa, Paul Osborne; McNeill, William Henry; Regan, Robert James; and Lech, Joseph Martin, 3,943,402.
Haugsjaa, Paul Osborne; Regan, Robert James; McNeill, William Henry; and Lech, Joseph Martin, 3,943,403.
McNeill, William Henry; Haugsjaa, Paul Osborne; Regan, Robert James; and Lech, Joseph Martin, 3,943,404.
Stoddard, James C., 3,943,451.

GTE Sylvania Incorporated: *See—*
Huston, Leroy; and Gounaris, George D., 3,943,395.
Williamson, David V., 3,943,375.

Guazzaloca, William A.: *See—*
Connors, Malcolm E.; Guazzaloca, William A.; and Wood, Herbert T., 3,942,563.

Guigan, Jean. Load conveyor. 3,942,627, Cl. 198-219.000.

Guntermann, Hans, to Elektro-Thermit GmbH. Process for the aluminothermic welding of rails. 3,942,579, Cl. 164-54.000.

Gurevich, Genrikh Georgievich: *See—*
Ginzburg, Arkady Savelievich; Gurevich, Genrikh Georgievich; Kirshtein, Generik Khaimovich; Kvasnevsky, Igor Porfirievich; Yakushonok, Vladimir Ivanovich; and Levin, Mikhail Naumovich, 3,942,377.

H. Nielsen & Son Maskinfabrik A/S: *See—*
Nielsen, Aage, 3,942,944.

H. Vissers B.V.: *See—*
Oosterling, Pieter Adriaan; and Hooftman, Johannes Philippus, 3,942,726.

Haarmann & Reimer Gesellschaft mit beschrankter Haftung: *See—*
Fleischer, Jurgen; Bauer, Kurt; and Hopp, Ruldolf, 3,943,181.

Haas, Donald A., Jr. Leaf collector. 3,942,832, Cl. 294-55.000.

Haas, Eduard. Tablet dispensing receptacle. 3,942,683, Cl. 221-229.000.

Haase, Jan R.: *See—*
Landholm, Richard A.; Haase, Jan R.; and Krutak, James J., Sr., 3,942,987.

Hachisu, Ryoyu: *See—*
Kawai, Yuzo; Kawai, Hajime; and Hachisu, Ryoyu, 3,942,422.

Haden, Walter L., Jr.: *See—*
Swanson, David B.; and Haden, Walter L., Jr., 3,943,233.

Haeusler, Jochen; Horn, Roland; and Kirschner, Werner, to Siemens Aktiengesellschaft. Arrangement for measuring temperatures. 3,943,434, Cl. 323-69.000.

Hagedorn, Guenter E. W., to Magnetic Controls Company. Telephone line control system. 3,943,305, Cl. 179-175.30R.

Hagen, Reinold; Giese, Peter; and Klusener, Peter, to Kautex-Werke Reinold Hagen GmbH. Closures for vessels. 3,942,677, Cl. 220-304.000.

Haggerty, John S., to Arthur D. Little, Inc. Apparatus for forming refractory tubing. 3,943,324, Cl. 219-121.00L.

Haines, Paul Gordon: *See—*
Popoff, Ivan Christoff; and Haines, Paul Gordon, 3,943,143.

Hair, Jakie A.; and Randolph, Thomas C., to Board of Regents for the Oklahoma Agricultural and Mechanical Colleges Acting for and on behalf of Oklahoma State University Argriculture & Applied Science, The. Removable arthropod repellent device for attachment to the ear of an agricultural animal. 3,942,480, Cl. 119-156.000.

Hajduk, Thaddeus J.: *See—*
Barber, Howard H.; and Hajduk, Thaddeus J., 3,943,438.

Hale, Timothy E.: *See—*
Hoyt, Carl E.; and Hale, Timothy E., 3,942,270.

Halfar, Kurt: *See—*
Arnold, Gunther; Paal, Gabor; Wilhelm, Alfred; Halfar, Kurt; and Vollmer, Hans Peter, 3,942,996.

Halik, Joseph John; Pitchon, Esra; Schulman, Marvin; Schwarz, Milton H.; and Yezek, Milton, to General Foods Corporation. Dried tofu powder. 3,943,266, Cl. 426-656.000.

Haller, Roland, to Harsco Corporation. Power cylinder construction. 3,942,415, Cl. 92-118.000.

Halliburton company: *See—*
Kalberer, Karl H., Jr.; and Fish, Harold D., 3,943,410.

Hamada, Tatuo: *See—*
Moriyama, Hiromi; Kuwabara, Motosuke; Tsuruda, Tadao; and Hamada, Tatuo, 3,943,299.

Hamed, Parviz, to Monsanto Company. Discontinuous cellulose fiber treated with plastic polymer and lubricant. 3,943,079, Cl. 260-17.4BB.

Hamel, Harvey C., to International Business Machines Corporation. Superconductive circuit level converter. 3,943,383, Cl. 307-261.000.

Hammarstrand, Sten Ove, to Svenska Hymas Aktiebolag. Device in hydraulic percussion tools. 3,942,322, Cl. 60-371.000.

Hampel, Uwe: *See—*
Unbehaun, Olaf; Hampel, Uwe; Scholz, Norbert; Gassmann, Horst; Schneider, Walter; Hesser, Heinz; Herrmann, Walter; and Bechert, Bertold, 3,942,448.

Hanaoka, Masanori; and Inagaki, Masao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Cooling system for lubricating oil in an internal combustion engine. 3,942,503, Cl. 123-196.0AB.

Hanatani, Shinji: *See—*
Momiyama, Takenori; Mizutani, Keiiti; Oi, Masakazu; and Hanatani, Shinji, 3,942,934.

Hanazono Kogu Kabushiki Kaisha: *See—*
Tanaka, Minoru, 3,942,397.

Handa, Makoto: *See—*
Hanzawa, Keiji; Takahashi, Yoshiyuki; Suga, Nobuyoshi; Kato, ojo; Handa, Makoto; Hayashi, Hiromichi; Taneya, Shinichi; and Sone, Toshimaro, 3,942,767.

Hankin, Donald Cameron, to McAllister Brothers Inc. Elevating pilothouse. 3,942,458, Cl. 114-71.000.

Hansen, Kenneth B.; and Olson, Robert K., to United Technologies Corporation. Valve actuating mechanism. 3,942,757, Cl. 251-78.000.

Hanson, Orlando W., to United States of America, Army. Strobe generator. 3,943,516, Cl. 343-18.00E.

Hanson, Richard Eric; and Nolan, Thomas Edward, Jr., to RCA Corporation. Power test means and method for internal combustion engines. 3,942,365, Cl. 73-116.000.

Hanson, Waldo B.: *See—*
Morrison, Ralph A.; and Hanson, Waldo B., 3,942,701.

Hanzawa, Keiji; Takahashi, Yoshiyuki; Suga, Nobuyoshi; Kato, ojo; Handa, Makoto; Hayashi, Hiromichi; Taneya, Shinichi; and Sone, Toshimaro, to Snow Brand Milk Products Co., Ltd.; and Anritsu Electric Co., Ltd. Method and apparatus for continuously automatically controlling the water content of kneaded viscous materials. 3,942,767, Cl. 259-7.000.

Hareyama, Kyuichi, to Nippon Electric Company, Limited. Current-splitting network. 3,943,431, Cl. 323-1.000.

Hargett, Edgar R. Pharyngeal and nasopharyngeal treatment. 3,942,512, Cl. 128-1.00R.

Harigaya, Hiroshi; Kano, Toshio; and Aizawa, Eishi, to Kabushiki Kaisha Suwa Seikosha. Semiconductor devices and methods of manufacturing same. 3,942,241, Cl. 29-571.000.

Harkness, Benjamin F.: *See—*
Baker, Charles; Harkness, Benjamin F.; and Norris, Alfred W., 3,942,445.

Harootian, Simon G. Injection carburetor. 3,943,207, Cl. 261-44.00A.

Harper & Tunstall Limited: *See—*
Ashburner, Adi Kaikhushiroo, 3,943,311.

Harpula, Jan; Piszak, Jur; Debski, Mieczyslaw; Rzepa, Tadeusz; Sliwa, Jerzy; and Heryan, Andrzej, to Instytut Odlewnictwa. Quick-hardening core and molding sand composition, and a method for its hardening. 3,943,089, Cl. 260-33.6UA.

Harris Company, The: *See—*
Andersen, Halvor L., 3,942,655.

Harris, Deane F., to Byrd Industries of Virginia, Inc. Necktie. 3,942,192, Cl. 2-152.00R.

Harrison, Kenneth S., to Mohasco Corporation. Recliner rester chair with projectible legrest and headrest, and hardware therefor. 3,942,835, Cl. 297-61.000.

Harrison, Ross R.: *See*—
Bundy, Patrick L.; and Harrison, Ross R., 3,942,712.

Harsco Corporation: *See*—
Clucker, Richard V.; and Kennedy, Roland R., 3,942,661.
Haller, Roland, 3,942,415.

Harshaw Chemical Company, The: *See*—
Willson, Karl Stuart, 3,943,040.

Hart, Charles G.; Cochrane, Richard H.; and Heiner, Harvey, to Hayssen Manufacturing Company. Packaging apparatus. 3,942,304, Cl. 53-182.00R.

Hart, Joseph J.: *See*—
Desmond, John D.; and Hart, Joseph J., 3,942,711.

Hart, Leroy D.: *See*—
Ballain, Marlyn D.; and Hart, Leroy D., 3,943,064.

Hart Schaffner & Marx: *See*—
Neef, William E.; and Marshalleck, Easton O., 3,942,783.

Hartline, Albert G., III, to Allegheny Ludlum Industries, Inc. Process for producing austenitic ferrous alloys. 3,943,010, Cl. 148-31.500.

Hartmann, John Charles, to RCA Corporation. Noncontacting marker. 3,943,527, Cl. 346-33.00F.

Hasegawa, Gary, to Continental Can Company, Inc. Full opening reclosable container closure. 3,942,675, Cl. 220-260.000.

Hasegawa, Nobuo: *See*—
Yamashita, Toshio; Kotake, Toshiro; Hasegawa, Nobuo; Yoshida, Manabu; and Kitamura, Saburo, 3,943,337.

Hashimoto, Norikazu: *See*—
Yanazawa, Hiroshi; Hashimoto, Norikazu; Ashikawa, Mikio; and Douta, Kikuo, 3,942,982.

Hasquenoph, Jean Henri; and Coutin, Pierre Fernand, to R. Alkan & Cie. Device for steadying loads suspended from aircraft. 3,942,749, Cl. 244-137.00R.

Hassinger, Walter P.: *See*—
Powers, Edward J.; and Hassinger, Walter P., 3,942,950.

Hatsuse, Toshikazu, to Citizen Watch Co., Ltd. Chain printer. 3,942,437, Cl. 101-111.000.

Hattori, Masataka; and Toda, Hisao, to Nippon Electric Co., Ltd. Helical-scan video tape recorder having a tape-loosening mechanism. 3,942,698, Cl. 226-50.000.

Hauck, Frederic Peter, to E. R. Squibb & Sons, Inc. Naphthyloxy acetic acids and related compounds. 3,943,149, Cl. 260-340.500.

Haugsjaa, Paul Osborne; Regan, Robert James; and McNeill, William Henry, to GTE Laboratories Incorporated. Electrodeless light source having a lamp holding fixture which has a separate characteristic impedance for the lamp starting and operating mode. 3,943,401, Cl. 315-39.000.

Haugsjaa, Paul Osborne; McNeill, William Henry; Regan, Robert James; and Lech, Joseph Martin, to GTE Laboratories Incorporated. Termination fixture for an electrodeless lamp. 3,943,402, Cl. 315-39.000.

Haugsjaa, Paul Osborne; Regan, Robert James; McNeill, William Henry; and Lech, Joseph Martin, to GTE Laboratories Incorporated. Electrodeless light source utilizing a lamp termination fixture having parallel capacitive impedance matching capability. 3,943,403, Cl. 315-39.000.

Haugsjaa, Paul Osborne: *See*—
McNeill, William Henry; Haugsjaa, Paul Osborne; Regan, Robert James; and Lech, Joseph Martin, 3,943,404.

Hauser, Raimund: *See*—
Besenmatter, Walter; Muszumanski, Trude; and Kurz, Gunter, 3,942,874.

Hayamizu, Yoshio: *See*—
Kawaguchi, Minoru; Yamasaki, Yasuki; Shimizu, Hideo; Taoka, Shinichi; and Hayamizu, Yoshio, 3,943,115.

Hayashi, Hiromichi: *See*—
Hanzawa, Keiji; Takahashi, Yoshiyuki; Suga, Nobuyoshi; Kato, ojo; Handa, Makoto; Hayashi, Hiromichi; Taneya, Shinichi; and Sone, Toshimaro, 3,942,767.

Hayashida, Yoshihiro, to Tokico Ltd. Hydraulic brake force-multiplying device. 3,942,326, Cl. 60-563.000.

Hayashida, Yoshihiro; and Amano, Haruyuki, to Tokico Ltd. Lining wear warning device. 3,943,486, Cl. 340-52.00A.

Haydock Caster Company: *See*—
Wood, Leroy J.; and Zych, Edward J., 3,942,220.

Hayssen Manufacturing Company: *See*—
Hart, Charles G.; Cochrane, Richard H.; and Heiner, Harvey, 3,942,304.

Hazen Research, Inc.: *See*—
Henrickson, Angus V., 3,942,765.

Hazlehurst, Ian, to Foseco International Limited. Casting of ingots. 3,942,580, Cl. 164-55.000.

Heath-Coleman, Roy Albert: *See*—
Bowles, Leslie Reginald; and Heath-Coleman, Roy Albert, 3,942,517.

Heckendorn, Roland: *See*—
Gagneux, Andre; Heckendorn, Roland; and Meier, Rene, 3,943,145.

Heeney, Matthew R.: *See*—
Fluder, Chester H.; and Heeney, Matthew R., 3,943,475.

Heilmann, Max, to AGFA-Gevaert Aktiengesellschaft. Process for bleach-fixing chromogenically color photographic silver halide material. 3,942,984, Cl. 96-60.0BF.

Heinbockel, Wolfgang: *See*—
Christ, Alfred; Heinbockel, Wolfgang; Kahmann, Albrecht; Muller, Karl; and Kohrs, Manfred, 3,942,728.

Heiner, Harvey: *See*—
Hart, Charles G.; Cochrane, Richard H.; and Heiner, Harvey, 3,942,304.

Heintze, Konrad, to Siemens Aktiengesellschaft. Method and apparatus for operating an inverter consisting of two sub-inverters. 3,943,429, Cl. 321-26.000.

Heinzelmann, Karl-Georg: *See*—
Platz, Winfried; and Heinzelmann, Karl-Georg, 3,943,366.

Heisler, Robert Walter, to Johns-Manville Corporation. Method of and an assembly for forming the bell end of a bell and spigot joint. 3,942,935, Cl. 425-393.000.

Helfrich, Robert C.: *See*—
Sisler, Robert R.; and Helfrich, Robert C., 3,942,265.

Heller, Hansjorg: *See*—
Schmidt, Andreas; and Heller, Hansjorg, 3,943,106.

Hellstrom, Harold Richard. Tear-away blister package. 3,942,640, Cl. 206-469.000.

Helmlinger, Daniel; and Naegeli, Peter, to Givaudan Corporation. Compounds of the sinensal type, intermediates and process therefor. 3,943,177, Cl. 260-593.00R.

Helterbrand, Arlen; and Logan, Zack H., to A-T-O Inc. Adjustable wrought iron railing assembly. 3,942,763, Cl. 256-22.000.

Henderson, Martin C.: *See*—
Koerner, Ralph J.; Bienhoff, Milton G.; Henderson, Martin C.; Higbee, John E.; and Koerner, Steve J., 3,943,339.

Hendrickson, Melvin C.; and Merrell, Richard G., to Zenith Radio Corporation. Multi-speed ramp for a varactor tuning system. 3,943,449, Cl. 325-420.000.

Hendrix, Charles E.: *See*—
Afendykiw, Marko; Boyle, John M.; and Hendrix, Charles E., 3,943,514.

Henkel & Cie GmbH: *See*—
Stein, Werner; Rupilius, Wolfgang; and Krings, Peter, 3,943,178.

Hennecken, Manfred: *See*—
Becker, Reinhold; Hennecken, Manfred; and Zimmermann, Hans-Georg, 3,942,569.

Hennemann, Jean, to UNELEC. Device for assembling and fixing electrical control panel equipment. 3,942,857, Cl. 339-75.00R.

Henrick, Clive A.; and Siddall, John B., to Zoecon Corporation. Synthesis of codling moth attractant. 3,943,157, Cl. 260-448.80R.

Henrickson, Angus V., to Hazen Research, Inc. Static mixing apparatus. 3,942,765, Cl. 259-4.00R.

Henry, Colin John McKenzie, to Royel International Pty. Ltd. Temperature control circuit for a hand held soldering tool. 3,943,326, Cl. 219-241.000.

Herald, Robert Frederick: *See*—
Dillinger, James Roland; Herald, Robert Frederick; and Miller, Irving Lionel, 3,942,620.

Herbert, James: *See*—
Stucki, Frank F.; and Herbert, James, 3,942,258.

Herbst, David R.; and Smith, Herchel, to American Home Products Corporation. Indole fused heterocyclic diuretic compounds. 3,943,148, Cl. 260-326.50B.

Hermach, Carl J., to Rockwell International Corporation. Compensating former fold. 3,942,782, Cl. 270-6.000.

Hermansdorfer, James E.; and Swygert, Wilbert E., Jr., to Sperry Rand Corporation. Frequency operated switch. 3,943,382, Cl. 307-233.00R.

Hermes, Julius, to Martin Processing Company, Incorporated. Process for treating dyed and undyed polyester materials with an agent to overcome or inhibit the destructive effects of ultraviolet light. 3,943,105, Cl. 260-47.00C.

Hermes, Walter L., to Curtiss-Wright Corporation. Rotor and gear assembly for rotary mechanisms. 3,942,918, Cl. 418-61.00A.

Hermstein, Wolfgang; and Schiemann, Heinz, to Siemens Aktiengesellschaft. Measuring transformer arrangement for a high-voltage installation carrying several conductors. 3,943,433, Cl. 323-44.00R.

Herrmann, Walter: *See*—
Unbehaun, Olaf; Hampel, Uwe; Scholz, Norbert; Gassmann, Horst; Schneider, Walter; Hesser, Heinz; Herrmann, Walter; and Bechert, Bertold, 3,942,448.

Herscher, Marvin B.: *See*—
Martin, Thomas B.; and Herscher, Marvin B., 3,943,295.

Heryan, Andrzej: *See*—
Harpula, Jan; Piszak, Jur; Debski, Mieczyslaw; Rzepa, Tadeusz; Sliwa, Jerzy; and Heryan, Andrzej, 3,943,089.

Herzfeld, Fred, to Lisa Rosenblatt. Device for aging wine or the like. 3,942,423, Cl. 99-277.100.

Hess, Patrick H., to Chevron Research Company. Method for delaying the setting of and acid-settable liquid in a terrestrial zone. 3,943,084, Cl. 260-29.60H.

Hesser, Heinz: *See*—
Unbehaun, Olaf; Hampel, Uwe; Scholz, Norbert; Gassmann, Horst; Schneider, Walter; Hesser, Heinz; Herrmann, Walter; and Bechert, Bertold, 3,942,448.

Hesston Corporation: *See*—
Case, Cecil L.; Fell, Ferol S.; and Burkhart, Merle K., 3,942,602.

Heuner, Robert Charles: *See*—
Morgan, David Keith; and Heuner, Robert Charles, 3,943,380.

Hewlett-Packard Company: *See*—
Edwards, Allen P., 3,943,440.

Heydemann, Richard-Wilhelm. Insulating container. 3,942,678, Cl. 220-342.000.

Heymer, Gero: *See*—
Wasel-Nielen, Horst-Dieter; Heymer, Gero; and Wirtz, Peter, 3,943,231.

Hi-Shear Corporation: *See—*
Bochman, Harry L., Jr.; and Wing, George S., 3,942,570.

Hibbard, George A.: *See—*
Bailey, Edward A.; Pertusio, Rene; and Hibbard, George A., 3,942,838.

Hickernell, Fred S.; and Moore, Larry A., to Motorola, Inc. Temperature stabilization of surface acoustic wave substrates. 3,943,389, Cl. 310-9.500.

Higbee, John E.: *See—*
Koerner, Ralph J.; Bienhoff, Milton G.; Henderson, Martin C.; Higbee, John E.; and Koerner, Steve J., 3,943,339.

Higgins, James Francis, to Du Pont de Nemours, E. I., and Company. Molybdate orange pigment with improved thermal stability. 3,942,998, Cl. 106-298.000.

Highgate, Donald James: *See—*
Cordrey, Philip William; Frankland, John David; and Highgate, Donald James, 3,943,045.

Higuchi, Takeru; Repta, Arnold J.; and Bourne, David W. A., to University of Kansas Endowment Association. Acronycine derivatives. 3,943,137, Cl. 260-279.00R.

Hilgers, Horst; and Schroter, Herbert, to Hoechst Aktiengesellschaft. Developing apparatus with automatic temperature control. 3,943,538, Cl. 354-299.000.

Hill, Richard L. Fishing lure. 3,942,281, Cl. 43-42.390.

Hill, Robert H. Safety brake for bicycles. 3,942,609, Cl. 188-24.000.

Hilti Aktiengesellschaft: *See—*
Maier, Elmar, 3,942,700.

Hind, Malcolm Arthur, to Crompton Electricars Limited. Electric vehicles. 3,943,420, Cl. 318-139.000.

Hinley, John James; and Porter, David Malcolm, to British Titan Limited. Pigments. 3,942,999, Cl. 106-300.000.

Hino, Naganori: *See—*
Satomi, Takeo; Mukai, Kunio; Mine, Akihiko; Hino, Naganori; and Tateishi, Kohshi, 3,943,203.

Hipp, Julius Carl, to Globe-Union Inc. Porous ceramic battery vent. 3,943,009, Cl. 136-177.000.

Hirafuji, Van, to Ricoh Co., Ltd. Liquid developing apparatus for electrophotography. 3,943,541, Cl. 354-318.000.

Hirai, Kazumi, to Matsushita Electric Industrial Co., Ltd. Microwave oven with triangular observation window. 3,943,318, Cl. 219-10.55D.

Hirai, Kazumi; and Fujitani, Yoshitomo, to Matsushita Electric Industrial Co., Ltd. Microwave oven with hinged door and latch means. 3,943,319, Cl. 219-10.55D.

Hirata, Isamu; Nishino, Makoto; and Saigo, Kazuhide, to Toyo Ink Manufacturing Co., Ltd. Method for producing powder paint. 3,942,261, Cl. 34-5.000.

Hirata, Yasuhiro; Kobayashi, Shoichi; Yamaguchi, Nobuo; Saito, Katshuhiko; Kimura, Mamoru; Iwasa, Yoshitel; Ueda, Masatoshi; and Magara, Hideki, to Takenaka Komuten Co., Ltd. Artificial land structure framework. 3,942,291, Cl. 52-169.00R.

Hironaka, Toshio: *See—*
Nonaka, Yuji; Kihara, Keiichi; Hironaka, Toshio; and Oda, Yasuhiro, 3,943,161.

Hisada, Yozi: *See—*
Ichikawa, Atsushi; Adachi, Norihiko; Kawanabe, Masayoshi; Hisada, Yozi; and Kohzaki, Yuichi, 3,942,995.

Hitachi, Ltd.: *See—*
Iguchi, Masaru, 3,942,492.
Konishi, Nobutake; Yatsuo, Tsutomu; Kamei, Tatsuya; Okamura, Masahiro; and Ogawa, Takuzo, 3,943,550.
Matsumoto, Yoshio; and Okamoto, Keiichi, 3,943,359.
Moriyama, Hiromi; Kuwabara, Motosuke; Tsuruda, Tadao; and Hamada, Tatuo, 3,943,299.
Nagano, Takahiro; Kamei, Tatsuya; and Ogawa, Takuzo, 3,943,547.
Shimotakahara, Tsumoru, 3,942,873.
Suda, Seiji; and Inui, Tomoji, 3,942,485.
Terasawa, Yoshio, 3,943,548.
Yamamoto, Naoki; Sato, Kikuji; and Oi, Tetsu, 3,943,570.
Yanazawa, Hiroshi; Hashimoto, Norikazu; Ashikawa, Mikio; and Douta, Kikuo, 3,942,982.
Yoshizawa, Shigeru; Saito, Nobuo; Mikami, Itsuo; and Kamoshita, Gen-ichi, 3,943,497.

Hjort, Mogens Ivan: *See—*
Olsen, Harry Herbert; and Hjort, Mogens Ivan, 3,943,030.

Hlavac, Andrew E., to Clairol Incorporated. Hair dryer with safety guard air outlet nozzle. 3,943,329, Cl. 219-367.000.

Ho, Irving T.; and Riseman, Jacob, to International Business Machines, Corporation. High reliability, low leakage, self-aligned silicon gate FET and method of fabricating same. 3,943,542, Cl. 357-23.000.

Hodge, Lee Roy, to Hughes Tool Company. Drill stem make-up and break-out system for earth drilling machines. 3,942,592, Cl. 173-157.090.

Hoechst Aktiengesellschaft: *See—*
Becker, Reinhold; Hennecken, Manfred; and Zimmermann, Hans-Georg, 3,942,569.
Cziska, Johann; Strauss, George; Portz, Wilhelm; Komorniczyk, Klaus; and Kandler, Joachim, 3,943,061.
Dany, Franz-Josef; Wortmann, Joachim; Munch, Peter; and Braun, Gunther, 3,943,194.
Fritze, Helmut; and Hultzsch, Kurt, 3,943,111.
Hilgers, Horst; and Schroter, Herbert, 3,943,538.
Kleiner, Hans-Jerg, 3,943,170.
Stemmler, Hans, 3,942,568.
Wasel-Nielen, Horst-Dieter; Heymer, Gero; and Wirtz, Peter, 3,943,231.

Hoener, Ralph H., Jr. Window wall washing device for high rise buildings. 3,942,213, Cl. 15-302.000.

Hofer, Gerald; and Konrath, Karl, to Robert Bosch GmbH. Fuel injection pump. 3,942,914, Cl. 417-289.000.

Hoff, Gunter; and Behrendt, Armin, to Dornier System GmbH. Apparatus for breaking-up, without contact, concrements present in the body of a living being. 3,942,531, Cl. 128-328.000.

Hoffbauer, Hans Gunther; and Kaufmann, Karl, to Mechanische Weberie GmbH. Cine projection screen. 3,942,868, Cl. 350-117.000.

Hoffman, Daniel S.: *See—*
Maksymiak, John; and Hoffman, Daniel S., 3,942,888.

Hoffman, Philip A. Battery charging circuit. 3,943,423, Cl. 320-22.000.

Hoffmann, Herbert, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Device for removing full bobbins on open-end spinning machines. 3,942,733, Cl. 242-35.50A.

Hoffmann, Karl H.; and Anderson, Donald R., to Nalco Chemical Company. Method of producing acrylamide with a Raney copper catalyst. 3,943,171, Cl. 260-561.00N.

Hoffmann-La Roche Inc.: *See—*
Frank, Ulrich Anton, 3,942,513.

Hofmann, Karl, to Robert Bosch GmbH. Fuel injection arrangement. 3,942,366, Cl. 73-119.00A.

Hogan, Al D.: *See—*
Schuller, Ronald A.; and Hogan, Al D., 3,942,551.

Hok, Bertil, to Siemens Aktiengesellschaft. Pressure transducer. 3,942,382, Cl. 73-398.0AR.

Hoke, Donald Irvin, to Lubrizol Corporation, The. Polymers of N-aminoalkyl acrylamides. 3,943,114, Cl. 260-85.5AM.

Hokuzen Shokai Co., Ltd.: *See—*
Kitagawa, Isoichi, 3,942,297.

Holbrook, Dwight. Archeological game. 3,942,800, Cl. 273-135.0AB.

Holl, Ludwig: *See—*
Fehrenbach, Karl Heinz; Holl, Ludwig; and Grunewald, Eberhard L., 3,943,308.

Holliday, Leslie; and Greenwood, Roger Newton, to Joseph Lucas (Industries) Limited. Pumps. 3,942,961, Cl. 55-203.000.

Holmes, Arthur Wilbert, Jr.; Oman, Price Ward; Paddock, Richard Charles; and Price, Donald Walter, to International Business Machines Corporation. Distributed execution processor. 3,943,494, Cl. 340-172.500.

Homco International, Inc.: *See—*
Rogers, Austin S., 3,942,373.

Honda, Thomas Shaw; and Ringwall, Carl Gustave, to General Electric Company. Torsional reed reference fluidic oscillator. 3,942,558, Cl. 137-826.000.

Honer, Harold Nickolas; Malaspina, Francis P.; and Martini, William J., to ESB Incorporated. Lead chloride electrode for seawater battery. 3,943,004, Cl. 136-100.00M.

Honeywell Information Systems Inc.: *See—*
Akriche, Jean; and Molitor, Andre, 3,943,348.

Honig, Milton L.; and Walsh, Edward N., to Stauffer Chemical Company. Bis alkyl phosphorus esters of dicarboxylic acids. 3,943,200, Cl. 260-932.000.

Honjo, Satoru; and Fukushima, Osamu, to Xerox Corporation. Method and apparatus for fixing toner images. 3,942,266, Cl. 34-122.000.

Hooftman, Johannes Philippus: *See—*
Oosterling, Pieter Adriaan; and Hooftman, Johannes Philippus, 3,942,726.

Hooker Chemicals & Plastics Corporation: *See—*
Cook, Edward H., Jr., 3,943,042.

Hoover Ball and Bearing Company: *See—*
Mandusky, Jack C.; and Riddle, Neville L., 3,942,777.

Hoover Company, The: *See—*
Minton, Keith G., 3,942,216.

Hoover, John R. E.: *See—*
DeMarinis, Robert M.; and Hoover, John R. E., 3,943,127.
DeMarinis, Robert M.; and Hoover, John R. E., 3,943,128.
De Marinis, Robert M.; and Hoover, John R. E., 3,943,131.

Hopp, Ruldolf: *See—*
Fleischer, Jurgen; Bauer, Kurt; and Hopp, Ruldolf, 3,943,181.

Hoppe, Robert A.: *See—*
Eckhardt, Dennis C.; Dunlap, Michael A.; and Hoppe, Robert A., 3,942,321.

Horikawa, Masaharu: *See—*
Abe, Takeaki; Horikawa, Masaharu; and Kurita, Jiro, 3,943,190.

Horizons Incorporated, a division of Horizons Research Incorporated: *See—*
Gerber, Arthur H., 3,943,125.

Horn, Roland: *See—*
Haeusler, Jochen; Horn, Roland; and Kirschner, Werner, 3,943,434.

Horning, Kenneth R.: *See—*
Servos, Gerald H.; and Horning, Kenneth R., 3,942,515.

Hou, Shou Ling, to Addressograph-Multigraph Corporation. Ion modulator device and method of using in positive and negative modes. 3,942,980, Cl. 96-1.500.

Houlihan, William J., to Sandoz, Inc. Process for imidazo isoindoles. 3,943,147, Cl. 260-309.600.

Howeth, David Franklin. Hydraulic throttle actuator. 3,942,325, Cl. 60-533.000.

Hoya Glass Works, Ltd.: *See—*
Osagawa, Masaaki; Kobayashi, Kunimitsu; and Nakagawa, Kenji, 3,942,965.

Hoyt, Carl E.; and Hale, Timothy E., to Singer Company, The. Simulation of visual blackout due to aircraft maneuvering. 3,942,270, Cl. 35-12.00N.

Hoyt, Robert M., to A. B. Chance Company. Portable pull testing unit for installed earth anchors. 3,942,368, Cl. 73-141.00R.

Hozumi, Hideo: *See—*
Kimura, Takeji; Sembokuya, Iwajiro; Hozumi, Hideo; and Oyama, Tomio, 3,943,280.

Hubers, Hendrik Jan: *See—*
La Grouw, Coenraad Maria; Van Den Wittenboer, Cornelus Wilhelmus Theresia; and Hubers, Hendrik Jan, 3,942,993.

Huffsmith, Charles S., to Wood Industries, Inc. Printing machine high voltage power system. 3,943,502, Cl. 340-253.00R.

Huffsmith, Charles S.: *See—*
Kulka, Robert A.; Bright, Thomas F.; Bruno, Thomas P.; and Huffsmith, Charles S., 3,943,501.

Hugelman, Rodney Dale; Kucharchuk, Raymond Anton; and Goss, Charles L. Transfer mechanism. 3,942,649, Cl. 214-1.0BH.

Hughes Aircraft Company: *See—*
Baldwin, Lawrence W.; and Zerkowitz, Avinoam S., 3,942,409.
Boucher, Robert J.; and Brackney, Robert L., Jr., 3,943,508.
Evans, Norol T.; and Hyneman, Richard F., 3,943,511.
Keller, Bruce W.; and Ernstoff, Michael N., 3,943,281.
Kuno, Hiromu J.; and English, David L., 3,943,463.

Hughes Steel Products Pty. Ltd.: *See—*
Hughes, William Felix, 3,942,768.

Hughes Tool Company: *See—*
Hodge, Lee Roy, 3,942,592.
Millsapps, Stuart C., Jr., 3,942,596.

Hughes, William Felix, to Hughes Steel Products Pty. Ltd. Mobile mixer. 3,942,768, Cl. 259-21.000.

Huignard, Jean Pierre: *See—*
d'Auria, Luigi; Chevalier, Guy; Favreau, Michel; Huignard, Jean Pierre; Lacotte, Jean Pierre; and Puech, Claude, 3,943,559.

Hullhorst, William B., to Owens-Corning Fiberglas Corporation. Method and apparatus for processing. 3,942,653, Cl. 214-8.50K.

Hultsch, Gunther; Zeppenfeld, Kurt; Niedner, Peter; and Ostermeyer, Peter, to Krauss-Maffei Aktiengesellschaft. Method of operating a centrifugal filter and a filter centrifuge operating according to this method. 3,943,056, Cl. 210-78.000.

Hultzsch, Kurt: *See—*
Fritze, Helmut; and Hultzsch, Kurt, 3,943,111.

Humble, David Raymond; and Walters, Harry Godfrey, III, to Sensormatic Electronics Corporation. Reusable security tag. 3,942,829, Cl. 292-316.000.

Hunnicutt, Cecil C. Snap-on necktie and device for convering ordinary four-in-hand necktie for snap-on usage. 3,942,191, Cl. 2-145.000.

Hunter, Alastair Wilson; and Thompson, Darrell R., to Ethicon, Inc. Braided suture. 3,942,532, Cl. 128-335.500.

Hurco Manufacturing Company Inc.: *See—*
Roch, Gerald V., 3,942,400.

Hussar, Joseph Paul; and Jolie, Ralph Albert, to General Electric Company. Reel construction. 3,942,741, Cl. 242-118.700.

Huston, Leroy; and Gounaris, George D., to GTE Sylvania Incorporated. Tubular incandescent lamp having spaced segments. 3,943,395, Cl. 313-273.000.

Huszty, Denes; and Sesztak, Emil. Overload protection and display circuit, particularly for sound radiators. 3,943,411, Cl. 317-33.00R.

Hycom Incorporated: *See—*
Motley, David M.; and Cheng, King Y., 3,943,448.

Hyneman, Richard F.: *See—*
Evans, Norol T.; and Hyneman, Richard F., 3,943,511.

Ibis Engineers Limited: *See—*
Kirkby, Christopher Armstrong, 3,942,340.

Ichikawa, Atsushi; Adachi, Norihiko; Kawanabe, Masayoshi; Hisada, Yozi; and Kohzaki, Yuichi, to Kanegaufchi Chemical Industries, Co. Ltd. Novel paper coating composition. 3,942,995, Cl. 106-124.000.

Ichinose, Akira; and Karube, Norio, to Matsushita Electric Industrial Company, Limited. High power multibeam laser. 3,943,461, Cl. 331-94.50C.

Iguchi, Masaru, to Hitachi, Ltd. Centrifugal ignition advancer device for an ignition system of an internal combustion engine. 3,942,492, Cl. 123-117.00R.

Ijlstra, Hendrik Jan: *See—*
Wijnant, Petrus Leo Clemens; and Ijlstra, Hendrik Jan, 3,942,803.

Illinois Tool Works Inc.: *See—*
Thompson, Richard Telman; and Simpson, David Lee, 3,942,254.

Imperial Chemical Industries Limited: *See—*
Difford, Anthony Miles Robert, 3,943,226.
Ridgway, Anthony Douglas; Smith, John Hugh; and Stainforth, Peter Terrick, 3,942,562.

Imperial Chemicl Industries, Ltd.: *See—*
Marshall, Geoffrey; and Riseley, Eric Ivan, 3,943,138.

IMS Limited: *See—*
Ogle, Robert W., 3,942,514.

Inaba, Yoshihito: *See—*
Morishita, Masataka; Inaba, Yoshihito; Fukushima, Mitsuru; Kobari, Sadami; Nagata, Akiho; and Abe, Jinnosuke, 3,943,063.

Inada, Masami; and Kondo, Toshiyuki, to Aisin Seiki Kabushiki Kaisha. Anti-skid control systems including an emergency accumulator for braking and skid control operations. 3,942,844, Cl. 303-21.0AF.

Inagaki, Masao: *See—*
Hanaoka, Masanori; and Inagaki, Masao, 3,942,503.

Indak Manufacturing Corporation: *See—*
Black III, Charles E., 3,942,604.
Raab, Andrew F.; and Cobb, Jesse M., 3,942,555.

Industrial Analytics Inc.: *See—*
Leonard, Ralph R.; and Taylor, Ted J., 3,942,337.

Industrial Woodworking Machine Co., Inc.: *See—*
Cromeens, Jeff Y., 3,942,233.

Infranor S.A.: *See—*
Clement, Gilbert-Louis, 3,942,780.

Ing. C. Olivetti & C., S.p.A.: *See—*
Bettini, Giuseppe; and Romano, Carlo, 3,943,569.

Ing, Paul W., to International Business Machines Corporation. Method for high temperature semiconductor processing. 3,943,015, Cl. 148-188.000.

Ingham, Michael J., to Richmond Marine Limited. Marine craft steering assembly. 3,942,462, Cl. 114-165.000.

Inoue, Masaaki: *See—*
Go, Tadahiro; Yaginuma, Hiroshi; and Inoue, Masaaki, 3,942,997.

Inoue, Norio: *See—*
Miyagawa, Toshio; Inoue, Norio; and Suenaga, Tadayuki, 3,943,193.

Institut Francais du Petrole: *See—*
Chan, Trinh Dinh; Martino, Germain; Sajus, Lucien; and Roux-Guerraz, Claude, 3,943,067.

Institut Francais du Petrole, des Carburants & Lubrifiants: *See—*
Dezael, Claude; Poitevin, Jean-Pierre; and Renault, Philippe, 3,943,228.

Instron Limited: *See—*
May, Colin Paul; and Street, John, 3,943,342.

Instrumentation & Control Systems, Inc.: *See—*
Servos, Gerald H.; and Horning, Kenneth R., 3,942,515.

Instytut Odlewnictwa: *See—*
Harpula, Jan; Piszak, Jur; Debski, Mieczyslaw; Rzepa, Tadeusz; Sliwa, Jerzy; and Heryan, Andrzej, 3,943,089.

Interelectric Aktiengesellschaft: *See—*
Wurm, Alfred, 3,943,058.

International Business Machines Corporation: *See—*
Brock, George W.; Kollar, Ernest P.; and Nettles, Michael L., 3,943,566.
Caragliano, Edward S.; and Nick, Howard H., 3,943,283.
Dillinger, James Roland; Herald, Robert Frederick; and Miller, Irving Lionel, 3,942,620.
Hamel, Harvey C., 3,943,383.
Ho, Irving T.; and Riseman, Jacob, 3,943,542.
Holmes, Arthur Wilbert, Jr.; Oman, Price Ward; Paddock, Richard Charles; and Price, Donald Walter, 3,943,494.
Ing, Paul W., 3,943,015.

International Flavors & Fragrances Inc.: *See—*
Evers, William J.; and Sieczkowski, Joseph, 3,942,537.

International Nickel Company, Inc., The: *See—*
Fisher, Gordon L.; and Cupp, Calvin R., 3,943,048.

International Sporting Goods, Inc.: *See—*
Lombardo, Gus F., 3,942,793.

International Standard Electric Corporation: *See—*
Barton, Paul, 3,943,518.
Colardelle, Joel Serge; Comte, Marie-Helene; and Regnier, Marc Andre, 3,943,432.
Thompson, George H. B., 3,943,462.

International Telephone and Telegraph Corporation: *See—*
De Filippis, John, 3,943,532.
Meyer, Roy Edwin, 3,942,296.

International Tools (1973) Limited: *See—*
Phillips, Otto, 3,942,630.

Interrad Corporation: *See—*
Marino, Frank P., 3,942,420.

Inui, Tomoji: *See—*
Suda, Seiji; and Inui, Tomoji, 3,942,485.

Inventors Engineering, Inc.: *See—*
Elmer, James W., 3,942,236.

Investrop A.G.: *See—*
Waage, Bard Meier, 3,942,529.

Involvo AG: *See—*
Roth, Oscar, 3,942,686.

Ipsen Industries International Gesellschaft mit beschrankter Haftung: *See—*
Burmeister, Karl-Heinz, 3,942,659.

Irie, Akiyoshi, to Kawasaki Heavy Industries, Ltd. Program control system for manipulator. 3,943,343, Cl. 235-151.110.

Ishikawa, Yasuyuki, to Canon Kabushiki Kaisha. Tape reel drive apparatus with driving torque control mechanism. 3,942,745, Cl. 242-201.000.

Ishizaki, Ayaaki: *See—*
Morinaga, Yasushi; Ishizaki, Ayaaki; and Otsuka, Shin-ichiro, 3,943,038.

Isuzu Motors Limited: *See—*
Tsuchiya, Kiichi, 3,942,557.

Ito, Shozo, to Mifuji Iron Works, Ltd. Process for eliminating nitrogenous ingredients from solid fuel. 3,942,956, Cl. 44-1.00R.

ITT Industries Inc.: *See—*
Achtstaetter, Gerhard, 3,943,385.

Iwama, Norio: *See—*
Uozumi, Minoru; Kawano, Fumio; and Iwama, Norio, 3,942,577.

Iwasa, Yoshitel: *See—*
Hirata, Yasuhiro; Kobayashi, Shoichi; Yamaguchi, Nobuo; Saito, Katshuhiko; Kimura, Mamoru; Iwasa, Yoshitel; Ueda, Masatoshi; and Magara, Hideki, 3,942,291.

Iwatsu Electric Co., Ltd.: *See—*
Arai, Minoru, 3,943,460.

Iyeta, Motoi, to Nippon Gakki Seizo Kabushiki Kaisha. Plunger damping means for an electromagnetic solenoid. 3,943,476, Cl. 335-239.000.

Izura, Yoshiteru; and Okano, Keisuke, to Matsushita Electric Industrial Company, Ltd. Apparatus for reproducing colored still picture image. 3,943,558, Cl. 358-1.000.

Izuta, Tadao, to Nippon Gakki Seizo Kabushiki Kaisha. Demountable archery bow. 3,942,506, Cl. 124-24.00R.

Jack, Harry Ross Scarlet; and Richards, Peter Henry, to Triplex Safety Glass Company Limited. Heat treatment of glass sheets. 3,942,967, Cl. 65-114.000.

Jackson, Norman Frank, to Plessey Handel und Investments A.G. Method of producing tantalum capacitors. 3,943,041, Cl. 204-56.00R.

Jackson, Sydney; and Shepherd, Alan Arthur, to Ferranti Limited. Related to the manufacture of lead frames and the mounting of semiconductor devices thereon. 3,942,245, Cl. 29-591.000.

Jackson, Winston Jerome, Jr.: *See—*
Musser, Harry Robert; and Jackson, Winston Jerome, Jr., 3,943,189.

Jacobson, Kenneth E.; and Thomas, Gary C., to Beckman Instruments, Inc. Flow-thru vacuum bushing for ultracentrifuges. 3,942,716, Cl. 233-1.00A.

Jaecklin, Andre A.; Cornu, Josef; and Lietz, Manfred, to BBC Brown, Boveri & Company, Limited. Thyristor. 3,943,549, Cl. 357-38.000.

Jagow, Robert B.: *See—*
Li, Yi-Sheng; Perry, Eugene N.; Jagow, Robert B.; and Wagner, Phillip A., 3,942,524.

Jakobs, Hans; and Juhnke, Charles J., to C. E. Niehoff & Co. Overvoltage protection circuit for wye connected electric machine. 3,943,408, Cl. 317-13.00R.

James, J. Michael: *See—*
Glynn, Thomas W.; and James, J. Michael, 3,942,516.

James, Thomas Howard. Soil penetrating, compacting and cementing composition. 3,943,078, Cl. 260-17.00R.

Jamet, Bruno; and Roget, Jean, to Rhone-Poulenc, S.A. Membrane support-plates and fluid separating apparatus in which they are present. 3,943,057, Cl. 210-321.00R.

Japan Magnetic Lock Co., Ltd.: *See—*
Sasahara, Takashi, 3,942,345.

Jebens, Robert Warren; and Morewood, William Henry, to RCA Corporation. Precision turntable rotation in a vacuum atmosphere. 3,943,275, Cl. 178-6.60R.

Jefferson Chemical Co., Inc.: *See—*
Brennan, Michael E.; and Yeakey, Ernest Leon, 3,943,162.
Waddill, Harold George, 3,943,104.

Jenkins, Anthony. Inspection apparatus. 3,942,357, Cl. 73-23.000.

Jenkins, Harry Lee; and Wright, Bobby Dean, to E. R. Carpenter Company, Inc. Upholstery coil spring. 3,942,776, Cl. 267-97.000.

Jenkins, James F.: *See—*
Black, Stanley A.; and Jenkins, James F., 3,942,511.

Jenkins, William A., to Monarch Marking Systems, Inc. Mold for making magnetic base. 3,942,754, Cl. 249-84.000.

Jewett, Harold A. Safety baffling and related equipment for swimming pools. 3,942,198, Cl. 4-172.000.

Jin, Jung Il, to Stauffer Chemical Company. Polymer composition of a vinyl compound, a bis (hydrocarbyl)vinylphosphonate and an allyl halide. 3,943,113, Cl. 260-80.710.

Jinsenji, Sei, to Ricoh Company, Ltd. Information tape cassette. 3,942,743, Cl. 242-192.000.

Jobst Institute, Inc.: *See—*
Tenteris, Ansis U.; Wetzel, Bruce W.; and Mosiniak, Dennis G., 3,942,518.

Johansson, Gert, to Skega Aktiebolag. Method of lining a steel structure. 3,942,239, Cl. 29-462.000.

Johansson, Lennart Nils; and Gronvall, Ragnar Karl Olof, to Forenade Fabriksverken. Hot gas engine. 3,942,324, Cl. 60-517.000.

Johns-Manville Corporation: *See—*
Barnett, Irvin; and Reimschussel, George Paul, 3,943,220.
Dakin, Gerald Frank, Jr.; Olney, Georges Louis; and Smyth, Desmond Patrick Robertson, 3,942,689.
Heisler, Robert Walter, 3,942,935.

Johnson, Colin A.: *See—*
Smith, Gerald C.; Ellingson, Dennis L.; Johnson, Colin A.; and Rhee, Seong K., 3,943,323.

Johnson, Robert Edward, to Whirlpool Corporation. Vacuum cleaner having edge cleaning features. 3,942,219, Cl. 15-383.000.

Johnson, Virgil E., Jr.; Etter, Robert J.; Lain, Horton W.; Stephens, Larry K.; and Van Dyke, Peter, to United States of America, Navy. Movable ramp inlet for water jet propelled ships. 3,942,463, Cl. 115-11.000.

Johnston, David B. R.: *See—*
Christensen, Burton G.; Fordice, Michael W.; and Johnston, David B. R., 3,943,153.

Johnston, Loren Bainum, Jr., to RCA Corporation. Electron beam recording in thick materials. 3,943,302, Cl. 179-100.40C.

Jolie, Ralph Albert: *See—*
Hussar, Joseph Paul; and Jolie, Ralph Albert, 3,942,741.

Jones, Elwyn David; and Scuffell, Derek Edgar, to Canadian Industries Limited. Bag severing machine. 3,942,694, Cl. 225-100.000.

Jones, Faber B.: *See—*
Brady, Donnie G.; Deck, Harold R.; Jones, Faber B.; and Underwood, John H., 3,943,164.

Jones, Howard S., Jr.: *See—*
Apstein, Maurice; Reggia, Frank; and Jones, Howard S., Jr., 3,943,520.

Jones, Lewis O.; and Mermelstein, Robert, to Xerox Corporation. Imaging system. 3,942,979, Cl. 96-1.0SD.

Jones, Milton P.: *See—*
Reeve, John R., Jr.; Busse, Ralph; Walker, Elbert; Welch, Raymond L.; Moore, Hermus C., Jr.; and Jones, Milton P., 3,942,593.

Jones, Thomas E.: *See—*
Crowell, Lee Tyler; Greenwood, Robert C.; and Jones, Thomas E., 3,942,543.

Jonsson, Erik Alfon: *See—*
Fahlstrom, Per Anders Herman Henningsson; and Jonsson, Erik Alfon, 3,942,727.

Jorgensen, George N.: *See—*
Carroll, James C.; Curry, Johnny R.; Jorgensen, George N.; King, Frank D.; and McGoldrick, Gilbert A., 3,943,272.

Joseph Lucas (Industries) Limited: *See—*
Holliday, Leslie; and Greenwood, Roger Newton, 3,942,961.

Jouffret, Michel: *See—*
Bost, Pierre-Etienne; Costantini, Michel; Jouffret, Michel; and Lartigau, Guy, 3,943,179.

Joy Manufacturing Company: *See—*
Bailey, Edward A.; Pertusio, Rene; and Hibbard, George A., 3,942,838.
Ma, James Ju Luan; and Goland, Yaacov, 3,942,758.

Juery, Gerard, to La Telemechanique Electrique. Plural interlocking slider cams allowing single actuator and multiple switch operation. 3,943,307, Cl. 200-5.00E.

Juhnke, Charles J.: *See—*
Jakobs, Hans; and Juhnke, Charles J., 3,943,408.

Jung, Heinz. Worm gear apparatus. 3,942,389, Cl. 74-458.000.

Juranitch, John R. Finishing sharpener and method for using same. 3,942,394, Cl. 76-84.000.

Justin Huppe, Firma: *See—*
Sudmann, Jurgen; and Wenzel, Holger, 3,942,197.

Kaartinen, Niilo H., to Packard Instrument Company, Inc. Combustion system for preparing radioactive samples and the like. 3,942,938, Cl. 431-3.000.

Kabel-und Metallwerke Gutehoffnungshuette AG: *See—*
Leuchs, Ottmar, 3,943,087.

Kabel-und Metallwerke Gutehoffnungshutte AG: *See—*
Langhans, Walter; Uhlmann, Otto; and Stephan, Norbert, 3,942,352.

Kabushiki Kaisha Suwa Seikosha: *See—*
Fujita, Kinji, 3,942,318.
Harigaya, Hiroshi; Kano, Toshio; and Aizawa, Eishi, 3,942,241.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Uozumi, Minoru; Kawano, Fumio; and Iwama, Norio, 3,942,577.

Kachik, Robert H.; Manganello, Samuel J.; and Pignocco, Arthur J., to United States Steel Corporation. Method of repairing large castings. 3,942,578, Cl. 164-54.000.

Kahmann, Albrecht: *See—*
Christ, Alfred; Heinbockel, Wolfgang; Kahmann, Albrecht; Muller, Karl; and Kohrs, Manfred, 3,942,728.

Kaiser Aluminum & Chemical Corporation: *See—*
Wittrock, Henry J., 3,943,039.

Kaiser, Carl: *See—*
Colella, Donald F.; and Kaiser, Carl, 3,943,173.
Colella, Donald F.; and Kaiser, Carl, 3,943,254.

Kaiser, Reinhold, to Telefunken Patentverwertungsgesellschaft m.b.H. Transistor. 3,943,546, Cl. 357-36.000.

Kajiyama, Shigeo; Kobayashi, Takamitsu; and Yoshizue, Keiro, to Sankyo Company Limited. Process for preparing acetonin. 3,943,134, Cl. 260-251.00R.

Kaken Kagaku Kabushiki Kaisha: *See—*
Komatsu, Nobuhiko; Sakai, Sumio; Saito, Gosaku; Kikumoto, Syoichi; and Kimura, Keitaro, 3,943,247.

Kalberer, Karl H., Jr.; and Fish, Harold D., to Halliburton company. Light assembly for use in a conduit. 3,943,410, Cl. 317-31.000.

Kalnish, Arvid Yanovich: *See—*
Kashkina, Nadezhda Alexandrovna; Pormale, Milda Yanovna; Kalnish, Arvid Yanovich; and Surna, Yan Alexandrovich, 3,943,150.

Kalognomos, Viktor Ivanovich: *See—*
Berzin, Albert Yazepovich; Buslovich, Solomon Leibovich; Bush, Gunar Yanovich; Gershanov, Gennady Khaimovich; Zhagars, Aivar Alfredovich; Kalognomos, Viktor Ivanovich; Sokolov, Georgy Kondratievich; Chervinsky, Jury Konstantinovich; and Yakovich, Zigmund Yazepovich, 3,943,505.

Kamei, Tatsuya: *See—*
Konishi, Nobutake; Yatsuo, Tsutomu; Kamei, Tatsuya; Okamura, Masahiro; and Ogawa, Takuzo, 3,943,550.
Nagano, Takahiro; Kamei, Tatsuya; and Ogawa, Takuzo, 3,943,547.

Kamensky, Veniamin Viktorovich: *See—*
Sudnishnikov, Boris Vasilievich; Kamensky, Veniamin Viktorovich; Varnello, Eduard Petrovich; and Tupitsyn, Sergei Konstantinovich, 3,942,595.

Kamoshita, Gen-ichi: *See—*
Yoshizawa, Shigeru; Saito, Nobuo; Mikami, Itsuo; and Kamoshita, Gen-ichi, 3,943,497.

Kanbar, Maurice S.: *See—*
Wilder, Joseph R.; Kanbar, Maurice S.; and Wilder, Cynthia K., 3,942,526.

Kandler, Joachim: *See—*
Cziska, Johann; Strauss, George; Portz, Wilhelm; Komorniczyk, Klaus; and Kandler, Joachim, 3,943,061.

Kanebo Ltd.: *See—*
Matsuyama, Teruko; Nishida, Tadao; and Uraya, Toru, 3,942,636.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Kozuka, Ko; Kurioka, Shunichiro; Yasumoto, Taizo; Kobayashi, Shigeru; Kubota, Atsuo; and Otoshi, Nobumasa, 3,943,223.

Kanegaufchi Chemical Industries, Co. Ltd.: *See—*
Ichikawa, Atsushi; Adachi, Norihiko; Kawanabe, Masayoshi; Hisada, Yozi; and Kohzaki, Yuichi, 3,942,995.

Kanner, Bernard: *See—*
Prokai, Bela; and Kanner, Bernard, 3,943,156.

Kano, Toshio: *See—*
Harigaya, Hiroshi; Kano, Toshio; and Aizawa, Eishi, 3,942,241.

Kanzler, Alfred Avery, to Chicago Bridge & Iron Company. Floating wave stilling chamber for liquid level indicator. 3,942,379, Cl. 73-311.000.

Kaplan, Louis. Indicating storage bin. 3,942,851, Cl. 312-120.000.

Kappus, Helmut: *See—*
Rodermund, Gerd; and Kappus, Helmut, 3,942,310.

Karl Kristian Kobs Kroyer: *See—*
Kroyer, Karl Kristian Kobs; Fredsted, Tage; and Brocks, Gunnar, 3,942,966.

Karlan, Mac. Method of and article for masking. 3,942,621, Cl. 197-181.000.

Karp, Edward C., to Sanitary Scale Company. Balancing means for a weighing scale. 3,942,597, Cl. 177-230.000.

Karube, Norio: *See—*
Ichinose, Akira; and Karube, Norio, 3,943,461.

Kashkina, Nadezhda Alexandrovna; Pormale, Milda Yanovna; Kalnish, Arvid Yanovich; and Surna, Yan Alexandrovich. Salt of b-diethylaminoethyl ester of p-aminobenzoic acid with acetal of polyvinyl alcohol and glyoxalic and method of preparing same. 3,943,150, Cl. 260-340.700.

Kasper, Andreas: *See—*
Dietze, Wolfgang; and Kasper, Andreas, 3,943,218.

Kathet Corporation: *See—*
Morris, Max O., 3,942,904.

Kato, ojo: *See—*
Hanzawa, Keiji; Takahashi, Yoshiyuki; Suga, Nobuyoshi; Kato, ojo; Handa, Makoto; Hayashi, Hiromichi; Taneya, Shinichi; and Sone, Toshimaro, 3,942,767.

Kato, Takashi: *See—*
Toda, Tadahide; and Kato, Takashi, 3,942,494.

Kaufmann, Karl: *See—*
Hoffbauer, Hans Gunther; and Kaufmann, Karl, 3,942,868.

Kautex-Werke Reinold Hagen GmbH: *See—*
Hagen, Reinold; Giese, Peter; and Klusener, Peter, 3,942,677.

Kawagoshi, Fumio; and Moriwaki, Motohiro, to Mitsubishi Monsanto Chemical Company. Polyvinyl chloride compositions containing trixylyl phospate and a second plasticizer. 3,943,097, Cl. 260-45.70P.

Kawaguchi, Minoru; Yamasaki, Yasuki; Shimizu, Hideo; Taoka, Shinichi; and Hayamizu, Yoshio, to Ube Industries, Ltd. Method for preparing finely divided ethylene polymer particles. 3,943,115, Cl. 260-87.300.

Kawaguchi, Yasuzi, to Nittan Kohki Kabushiki Kaisha. Hooked clutch. 3,942,834, Cl. 294-110.00R.

Kawai, Hajime: *See—*
Kawai, Yuzo; Kawai, Hajime; and Hachisu, Ryoyu, 3,942,422.

Kawai, Yuzo; Kawai, Hajime; and Hachisu, Ryoyu, to Suiden Kabushiki Kaisha. Roof ventilator. 3,942,422, Cl. 98-116.000.

Kawamoto, Hirohisa; and Allen, Elmer Lawrence, Jr., to RCA Corporation. Mechanical structure for mounting microwave diode packages. 3,943,469, Cl. 333-84.00M.

Kawamoto, Takao; Mizuno, Nobuyoshi; and Ota, Akira, to NCR Corporation. Lock mechanism. 3,943,309, Cl. 200-44.000.

Kawanabe, Masayoshi: *See—*
Ichikawa, Atsushi; Adachi, Norihiko; Kawanabe, Masayoshi; Hisada, Yozi; and Kohzaki, Yuichi, 3,942,995.

Kawano, Fumio: *See—*
Uozumi, Minoru; Kawano, Fumio; and Iwama, Norio, 3,942,577.

Kawasaki Heavy Industries, Ltd.: *See—*
Irie, Akiyoshi, 3,943,343.

Kayabakogyokabushikikaisha: *See—*
Murata, Hikaru; Umeda, Yasuji; Sakurai, Yasusada; and Doi, Yasuo, 3,942,548.

Kazahaya, Masahiro, to Fischer & Porter Co. Multiplex telemetering system. 3,943,488, Cl. 340-147.00C.

Kazuo, Kawasaki. Ejection device for tape cartridge. 3,943,567, Cl. 360-93.000.

Keenan, John Gregory; Chilman, John Alfred; and Brooking, Ivor Harold, to Dowty Rotol Limited. Bladed rotors. 3,942,911, Cl. 416-157.00A.

Keener, Ronald L.; and Kittle, Paul A., to Rohm and Haas Company. Method of removing iodine and compounds thereof from gaseous effluents. 3,943,229, Cl. 423-240.000.

Keever, Joseph M., to Westinghouse Electric Corporation. Tamper-proof external test contact arrangement for watthour meters. 3,943,413, Cl. 317-107.000.

Keller, Bruce W.; and Ernstoff, Michael N., to Hughes Aircraft Company. Multiple beam CRT for generating a multiple raster display. 3,943,281, Cl. 178-7.50D.

Keller, James R. Roof truss testing machine. 3,942,362, Cl. 73-88.00R.

Kelz, Norbert R. Pressure moulding machines and mould parts therefor. 3,942,928, Cl. 425-138.000.

Kennecott Copper Corporation: *See—*
Moreau, Eugene J.; Opalanko, Richard S.; Schapiro, Norman; and Lueders, Robert E., 3,942,974.

Kennedy, Richard W.; and Tefft, Edward G., to General Electric Company. Triac with gold diffused boundary. 3,943,013, Cl. 148-187.000.

Kennedy, Roland R.: *See—*
Clucker, Richard V.; and Kennedy, Roland R., 3,942,661.

Kenny, John: *See—*
Allen, Kenneth Roy; Kenny, John; and Spurrell, Roworth Adrian John, 3,942,534.

Kepler, Larry A. Seal and bearing installation tool. 3,942,234, Cl. 29-201.00R.

Keuper, John J.; and Wagner, Paul D., to Allis-Chalmers Corporation. Combination slot liner and retainer for dynamoelectric machine conductor bars. 3,943,392, Cl. 310-215.000.

Kevrolev, Vladimir Petrovich: *See—*
Aristarkhov, Nikolai Nikolaevich; Efimov, Igor Alexandrovich; Zaitsev, Boris Ivanovich; Peters, Iskra Genrikhovna; Tymosh, Boris Severianovich; Filonov, Viktor Sergeevich; Sharov, Alexei Lavrentievich; Shildin, Alexei Ivanovich; Balashova, Galina Stepanovna; Bets, Nikolai Ivanovich; Skvortsov, Stanislav Alexandrovich; Yakovleva, Valentina Stepanovna; Zhuchkov, Ivan Ilich; Gorjunov, Vladimir Sergeevich; Petrov, Vladimir Alexeevich; Kevrolev, Vladimir Petrovich; Rybakov, Valery Nikolaevich; and Tverdovsky, Ninel Dmitrievich, 3,943,365.

Keyes, Richard E.; and Lingert, Ralph E., to Finn Equipment Company, The. Water-borne craft having mix tank or the like movable between elevated and lowered positions. 3,942,457, Cl. 114-61.000.

Keyl, Erwin: *See—*
Thiele, Gerd; and Keyl, Erwin, 3,943,426.

Khaidurov, Efim Leontievich; and Razorenov, Vladimir Alexandrovich. Aiming device for match weapons. 3,942,256, Cl. 33-257.000.

Khalid, Joseph M., to Square D Company. Current limiting circuit breaker. 3,943,473, Cl. 335-16.000.

Khalid, Joseph M.: *See—*
Oster, Clark L.; and Khalid, Joseph M., 3,943,472.

Khrolenko, Viktor Fedorovich: *See—*
Gebel, Iosif Davydovich; Zykov, Arkady Alexandrovich; Nefedov, Askold Ivanovich; Parshikov, Viktor Ivanovich; and Khrolenko, Viktor Fedorovich, 3,942,253.

Kidd, Alan Lister; Eaves, Douglas; and Walmsley, Keith, to Dorman Smith Switchgear Limited. Electrical circuit breakers. 3,943,477, Cl. 337-57.000.

Kidode, Masatsugu; and Asada, Haruo, to Tokyo Shibaura Electric Co., Ltd. Apparatus for measuring the elevation of a three-dimensional foreground subject. 3,943,344, Cl. 235-151.320.

Kihara, Keiichi: *See—*
Nonaka, Yuji; Kihara, Keiichi; Hironaka, Toshio; and Oda, Yasuhiro, 3,943,161.

Kikumoto, Syoichi: *See—*
Komatsu, Nobuhiko; Sakai, Sumio; Saito, Gosaku; Kikumoto, Syoichi; and Kimura, Keitaro, 3,943,247.

Kim, Choong-Ki, to Fairchild Camera and Instrument Corporation. Low interelectrode leakage structure for charge-coupled devices. 3,943,545, Cl. 357-24.000.

Kim, Dae K.: *See—*
Bertolacini, Ralph J.; and Kim, Dae K., 3,943,050.

Kimura, Keitaro: *See—*
Komatsu, Nobuhiko; Sakai, Sumio; Saito, Gosaku; Kikumoto, Syoichi; and Kimura, Keitaro, 3,943,247.

Kimura, Koichi: *See—*
Aihara, Toru; and Kimura, Koichi, 3,943,306.

Kimura, Koya; and Maeda, Kunitaka, to Toshiba Kikai Kabushiki Kaisha. Speed detectors. 3,943,443, Cl. 324-163.000.

Kimura, Mamoru: *See—*
Hirata, Yasuhiro; Kobayashi, Shoichi; Yamaguchi, Nobuo; Saito, Katshuhiko; Kimura, Mamoru; Iwasa, Yoshitel; Ueda, Masatoshi; and Magara, Hideki, 3,942,291.

Kimura, Takeji; Sembokuya, Iwajiro; Hozumi, Hideo; and Oyama, Tomio, to Matsushita Electric Industrial Company, Ltd. Television receiver with zoom storage tube frame grabber with electronic inset into continuing received video stream. 3,943,280, Cl. 178-7.50R.

King, Frank D.: *See—*
Carroll, James C.; Curry, Johnny R.; Jorgensen, George N.; King, Frank D.; and McGoldrick, Gilbert A., 3,943,272.

King, Reynold C.: *See—*
Kokjohn, Leonard D.; Seeley, Wayne R.; Brown, Charles A.; and King, Reynold C., 3,943,333.

King, Victor Howard George, to Barking Brassware Co., Ltd. Valves. 3,942,760, Cl. 251-267.000.

Kinker, Donald E.; and Morello, Herbert, to Diebold, Incorporated. Automatic banking equipment. 3,943,335, Cl. 235-61.70B.

Kinnier Wilson, Alexander Bruce, to National Research Development Corporation. Surgical splints and materials therefor. 3,942,522, Cl. 128-90.000.

Kinoshita, Makoto: *See—*
Kose, Saburo; and Kinoshita, Makoto, 3,943,396.

Kirchner, Harold G., to United States of America, Army. Hydraulic fan drive system speed control. 3,942,486, Cl. 123-41.120.

Kirkby, Christopher Armstrong, to Ibis Engineers Limited. Apparatus for washing and laundering garments. 3,942,340, Cl. 68-3.00R.

Kirschner, Werner: *See—*
Haeusler, Jochen; Horn, Roland; and Kirschner, Werner, 3,943,434.

Kirshtein, Generik Khaimovich: *See—*
Ginzburg, Arkady Savelievich; Gurevich, Genrikh Georgievich; Kirshtein, Generik Khaimovich; Kvasnevsky, Igor Porfirievich; Yakushonok, Vladimir Ivanovich; and Levin, Mikhail Naumovich, 3,942,377.

Kish, Arthur S., to Murray Corporation. Suction throttling valve. 3,942,333, Cl. 62-217.000.

Kistner, Jerome L.: *See—*
Aultz, Thomas R.; and Kistner, Jerome L., 3,942,435.

Kitagawa, Isoichi, to Hokuzen Shokai Co., Ltd. Framework for housing automobiles or the like. 3,942,297, Cl. 52-637.000.

Kitamura, Saburo: *See—*
Yamashita, Toshio; Kotake, Toshiro; Hasegawa, Nobuo; Yoshida, Manabu; and Kitamura, Saburo, 3,943,337.

Kittle, Paul A.: *See—*
Keener, Ronald L.; and Kittle, Paul A., 3,943,229.

Klang, Hans Georg: *See—*
Engstrom, Carl Bengt Alfred; Klang, Hans Georg; and Persson, Gosta, 3,942,990.

Klaue, Hermann. Spreading disc brake with removable shoes. 3,942,610, Cl. 188-71.400.

Klein, Martin: *See—*
Baker, Bernard; and Klein, Martin, 3,943,006.

Klein, Norman E.; and Stewart, William H., Jr., to Deering Milliken Research Corporation. Apparatus for dyeing and printing materials. 3,942,342, Cl. 68-205.00R.

Klein, Norman E., to Deering Milliken Research Corporation. Apparatus for dyeing and printing materials having improved dye recirculation means. 3,942,343, Cl. 68-205.00R.

Klein, Peter P.; and Braun, Robert E., to Burroughs Corporation. Hold down device for use in electronic systems employing integrated circuits. 3,942,854, Cl. 339-17.0CF.

Kleiner, Hans-Jerg, to Hoechst Aktiengesellschaft. Process for the preparation of halo-methylphosphinic acid halides. 3,943,170, Cl. 260-543.00P.

Kleinewefers Industrie-Companie GmbH: *See—*
Wenzel, Reinhard; and Reich, Siegfried, 3,942,434.

Klippel, Allen Pummill, to Rescue Products, Inc. Extension splint. 3,942,521, Cl. 128-85.000.

Klockner-Humboldt-Deutz AG: *See—*
Deussner, Herbert; and Fleischer, Joachim, 3,942,942.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Rathnow, Erich; and Rasch, Hans-Joachim, 3,942,388.

Klose, Robert E.: *See—*
Bahoshy, Bernard J.; Klose, Robert E.; and Nordstrom, Harold A., 3,943,258.

Klusendorf, John I.: *See—*
Schmutzer, Joel J.; Klusendorf, John I.; and Grichnik, James J., 3,943,356.

Klusener, Peter: *See—*
Hagen, Reinold; Giese, Peter; and Klusener, Peter, 3,942,677.

Kmak, Walter S.; and Yates, David J. C., to Exxon Research & Engineering Co. Regeneration procedure. 3,943,052, Cl. 208-140.000.

Knight, William J.: *See—*
Timmermeyer, Leo C.; Davis, Samuel; and Knight, William J., 3,943,414.

Knipp, Ulrich: *See—*
Grune, Horst; and Knipp, Ulrich, 3,943,215.

Knirsch, Franco: *See—*
Di Blas, Umberto; and Knirsch, Franco, 3,942,983.

Knitter, Roger W., to Zenith Radio Corporation. Record tracking pickup structure for a capacitive disc. 3,943,276, Cl. 178-6.60R.

Knutsen, Roald Willies. Apparatus for unloading material such as chips or the like from the bottom of a silo. 3,942,657, Cl. 214-17.0DA.

Knutsen, Roald Willies. Arrangement in a silo for bulk material. 3,942,771, Cl. 259-107.000.

Kobari, Sadami: *See—*
Morishita, Masataka; Inaba, Yoshihito; Fukushima, Mitsuru; Kobari, Sadami; Nagata, Akiho; and Abe, Jinnosuke, 3,943,063.

Kobayashi, Kunimitsu: *See—*
Osagawa, Masaaki; Kobayashi, Kunimitsu; and Nakagawa, Kenji, 3,942,965.

Kobayashi, Nobuyuki; Tanoue, Ken; and Nakada, Masahiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Arrangement for heating the suction gases of an internal combustion engine. 3,942,495, Cl. 123-122.0AC.

Kobayashi, Shigeru: *See—*
Kozuka, Ko; Kurioka, Shunichiro; Yasumoto, Taizo; Kobayashi, Shigeru; Kubota, Atsuo; and Otoshi, Nobumasa, 3,943,223.

Kobayashi, Shoichi: *See—*
Hirata, Yasuhiro; Kobayashi, Shoichi; Yamaguchi, Nobuo; Saito, Katshuhiko; Kimura, Mamoru; Iwasa, Yoshitel; Ueda, Masatoshi; and Magara, Hideki, 3,942,291.

Kobayashi, Takamitsu: *See—*
Kajiyama, Shigeo; Kobayashi, Takamitsu; and Yoshizue, Keiro, 3,943,134.

Kobayashi, Toshiyuki; Sunazuka, Kensuke; Mayama, Takeshi; and Okada, Akira, to Meija Seika Co., Ltd. Method for the preparation of medicinal capsules. 3,943,238, Cl. 424-37.000.

Kocks, Friedrich: *See—*
Brauer, Hans; and Duepper, Paul, 3,942,350.

Kockums Mekaniska Verkstads Aktiebolag: *See—*
Olofsson, Svante Bertil, 3,942,468.

Koehm, Ronald E.; and Fabbri, Dante, to Koehm, Ronald E.; Fabbri, Dante; and Kunik, I. Jordan, part interest to each. Fuel saving system and apparatus for internal combustion engines. 3,942,500, Cl. 123-141.000.

Koehm, Ronald E.: *See—*
Kunik, I. Jordan; Koehm, Ronald E.; and Fabbri, Dante, 3,942,499.

Koehn, Wilbur R., to ProMed Laboratories Inc. Catheter. 3,943,225, Cl. 264-255.000.

Koenig & Bauer Aktiengesellschaft: *See—*
Bolza-Schunemann, Hans Bernhard, 3,942,787.

Koerner, Ralph J.; Bienhoff, Milton G.; Henderson, Martin C.; Higbee, John E.; and Koerner, Steve J., to Canoga Controls Corporation. Inductive loop detector system. 3,943,339, Cl. 235-92.0TC.

Koerner, Steve J.: *See—*
Koerner, Ralph J.; Bienhoff, Milton G.; Henderson, Martin C.; Higbee, John E.; and Koerner, Steve J., 3,943,339.

Kohrs, Manfred: *See—*
Christ, Alfred; Heinbockel, Wolfgang; Kahmann, Albrecht; Muller, Karl; and Kohrs, Manfred, 3,942,728.

Kohzaki, Yuichi: *See—*
Ichikawa, Atsushi; Adachi, Norihiko; Kawanabe, Masayoshi; Hisada, Yozi; and Kohzaki, Yuichi, 3,942,995.

Kokjohn, Leonard D.; Seeley, Wayne R.; Brown, Charles A.; and King, Reynold C. Open coil electric heating elements. 3,943,333, Cl. 219-532.000.

Koleske, Joseph Victor: *See—*
Smith, Oliver Wendell; and Koleske, Joseph Victor, 3,943,082.

Kollar, Ernest P.: *See—*
Brock, George W.; Kollar, Ernest P.; and Nettles, Michael L., 3,943,566.

Kollsman, Paul. Slip resistant surfaces for bathing fixtures, such as bathtubs and shower receptors. 3,942,199, Cl. 4-185.00R.

Komatsu, Nobuhiko; Sakai, Sumio; Saito, Gosaku; Kikumoto, Syoichi; and Kimura, Keitaro, to Kaken Kagaku Kabushiki Kaisha; and Taito Co., Ltd. Treatment of bacterial infections with glucan compositions. 3,943,247, Cl. 424-180.000.

Komorniczyk, Klaus: *See—*
Cziska, Johann; Strauss, George; Portz, Wilhelm; Komorniczyk, Klaus; and Kandler, Joachim, 3,943,061.

Kondo, Toshiyuki: *See—*
Inada, Masami; and Kondo, Toshiyuki, 3,942,844.

Koninklijke Nederlandsche Gist-En Spiritusfabriek N.V.: *See—*
Bose, Ajay K., 3,943,123.

Konishi, Nobutake; Yatsuo, Tsutomu; Kamei, Tatsuya; Okamura, Masahiro; and Ogawa, Takuzo, to Hitachi, Ltd. Light-activated semiconductor-controlled rectifier. 3,943,550, Cl. 357-38.000.

Konrath, Karl: *See—*
Hofer, Gerald; and Konrath, Karl, 3,942,914.

Kook, John F., to Du Pont de Nemours, E. I., and Company. Toilet bowl sanitizer and bathroom deodorizer. 3,943,243, Cl. 424-76.000.

Kool, Bram, to Microform Data Systems, Inc. Microfiche reader. 3,942,885, Cl. 353-27.00R.

Korenkov, Vladimir Nikolaevich; Romanenko, Vitaly Ivanovich; Kuznetsov, Sergei Ivanovich; and Voronov, Jury Viktorovich. Process for purification of industrial waste waters from perchlorates and chlorates. 3,943,055, Cl. 210-2.000.

Korodi, Miklos B. Electrical conductor with light indicating means. 3,942,859, Cl. 339-113.00L.

Korthaus, Helmut: *See—*
Wilke, Richard; and Korthaus, Helmut, 3,942,846.

Kose, Saburo; and Kinoshita, Makoto, to Agency of Industrial Science & Technology. High luminous intensity arc electrode of lantanum chromite. 3,943,396, Cl. 313-311.000.

Koski, Dale H. Disc tossing game. 3,942,798, Cl. 273-103.000.

Kostrzewski, Patti L.: *See—*
Barer, Sol J.; and Kostrzewski, Patti L., 3,943,253.

Kotake, Toshiro: *See—*
Yamashita, Toshio; Kotake, Toshiro; Hasegawa, Nobuo; Yoshida, Manabu; and Kitamura, Saburo, 3,943,337.

Kovach, Paul E.: *See—*
Bernstein, Joel L.; and Kovach, Paul E., 3,943,312.

Kovach, Stephen M.; and Wilson, George D., to Ashland Oil, Inc. Selective hydrogenation of aromatics and olefins in hydrocarbon fractions. 3,943,053, Cl. 208-143.000.

Kozlow, Woodruff J. Snowmobile ski. 3,942,812, Cl. 280-28.000.

Kozuka, Ko; Kurioka, Shunichiro; Yasumoto, Taizo; Kobayashi, Shigeru; Kubota, Atsuo; and Otoshi, Nobumasa, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Method of manufacturing acrylic fibers. 3,943,223, Cl. 264-182.000.

Kraft, Louis Seelback, to Goodyear Tire & Rubber Company, The. Tire safety support. 3,942,571, Cl. 152-158.000.

Kraft, Paul; and Altscher, Siegfried, to Stauffer Chemical Company. Suspension copolymer composition. 3,943,085, Cl. 260-29.60H.

Kraftco Corporation: *See—*
Davis, Paul F., 3,943,264.

Kramer, Hyman. Supporting button for articles of luggage, etc. 3,942,225, Cl. 24-94.000.

Kranz, Walter; and Tillmann, Heinz, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Electrofluidic converter. 3,942,559, Cl. 137-831.000.

Krauss-Maffei Aktiengesellschaft: *See—*
Hultsch, Gunther; Zeppenfeld, Kurt; Niedner, Peter; and Ostermeyer, Peter, 3,943,056.

Krautkramer-Branson, Incorporated: *See—*
Pies, Wilfried, 3,942,358.

Rath, Walter; and Worschech, Rudolf, 3,942,361.
Krekeler, Ulrich; and Schneller, Peter, to AGFA-Gevaert Aktiengesellschaft. Optical filter. 3,943,019, Cl. 156-99.000.
Krenzer, John: *See—*
Richter, Sidney B.; and Krenzer, John, 3,942,972.
Krier, Keith N.; Brown, Neil F.; and Waldhauser, Steven J. A., to Tennant Company. Scrubbing machine. 3,942,218, Cl. 15-340.000.
Krings, Peter: *See—*
Stein, Werner; Rupilius, Wolfgang; and Krings, Peter, 3,943,178.
Kristiansen, Knud Erik, to Thorsted Maskiner A/S. Biscuit packing systems. 3,942,303, Cl. 53-159.000.
Kristiansen, Odd: *See—*
Beriger, Ernst; Boger, Manfred; Drabek, Jozef; and Kristiansen, Odd, 3,943,202.
Kroetz, John Alden: *See—*
Eberle, Richard Francis; and Kroetz, John Alden, 3,942,668.
Kroll, Steve: *See—*
Binks, Chester J.; and Kroll, Steve, 3,942,426.
Kroyer, Karl Kristian Kobs; Fredsted, Tage; and Brocks, Gunnar, to Karl Kristian Kobs Kroyer. Methods of preparing ceramic material. 3,942,966, Cl. 65-33.000.
Krueger, Theodore H.; and Spaulding, David B., to Seal Incorporated. Laminating apparatus. 3,943,031, Cl. 156-583.000.
Krumrein, Gerhard; and Kuhlmann, Joachim, to Licentia Patent-Verwaltungs G.m.b.H. Monostable trigger arrangement. 3,943,384, Cl. 307-273.000.
Krutak, James J., Sr.: *See—*
Landholm, Richard A.; Haase, Jan R.; and Krutak, James J., Sr., 3,942,987.
Kublan, Neal, to Mego Corporation. Doll with seven spherical torso joints and five appendages held by three-secured elastic members. 3,942,284, Cl. 46-161.000.
Kubota, Atsuo: *See—*
Kozuka, Ko; Kurioka, Shunichiro; Yasumoto, Taizo; Kobayashi, Shigeru; Kubota, Atsuo; and Otoshi, Nobumasa, 3,943,223.
Kucharchuk, Raymond Anton: *See—*
Hugelman, Rodney Dale; Kucharchuk, Raymond Anton; and Goss, Charles L., 3,942,649.
Kuckuck, Helmut: *See—*
Auinger, Herbert; Bohm, Franz; Kuckuck, Helmut; and Voigt, Hans, 3,942,643.
Kugelfischer Georg Schafer & Co.: *See—*
Gassner, Hans; Thielemann, Max; and Schuster, Friedrich, 3,942,313.
Kuhlmann, Joachim: *See—*
Krumrein, Gerhard; and Kuhlmann, Joachim, 3,943,384.
Kulka, Helen C. Animal noise protection devices. 3,942,306, Cl. 54-80.000.
Kulka, Robert A.; Bright, Thomas F.; Bruno, Thomas P.; and Huffsmith, Charles S., to Wood Industries, Inc. Printing machine high voltage power system and circuit. 3,943,501, Cl. 340-253.00R.
Kumano, Masayoshi, to Mitsubishi Denki Kabushi Kaisha. Circuitry for reducing thyristor turn-off times. 3,943,430, Cl. 321-45.00C.
Kunik, I. Jordan; Koehm, Ronald E.; and Fabbri, Dante, to Kunik, I. Jordan; Koehm, Ronald E.; and Fabbri, Dante, a part interest to each. Carburetor improvement system and apparatus. 3,942,499, Cl. 123-141.000.
Kunik, I. Jordan: *See—*
Koehm, Ronald E.; and Fabbri, Dante, 3,942,500.
Kuno, Hiromu J.; and English, David L., to Hughes Aircraft Company. Tunable oscillator/amplifier circuit for millimeter-wave diodes. 3,943,463, Cl. 331-107.00R.
Kupcikevicius, Vytautas, to Union Carbide Corporation. Cantilevered belted bag loading apparatus and method. 3,942,624, Cl. 198-37.000.
Kupka, Detlef; and Oberhuber, Alfred, to Siemens Aktiengesellschaft. Controlled single pulse blocking converter. 3,943,425, Cl. 321-2.000.
Kurioka, Shunichiro: *See—*
Kozuka, Ko; Kurioka, Shunichiro; Yasumoto, Taizo; Kobayashi, Shigeru; Kubota, Atsuo; and Otoshi, Nobumasa, 3,943,223.
Kurita, Jiro: *See—*
Abe, Takeaki; Horikawa, Masaharu; and Kurita, Jiro, 3,943,190.
Kurita, Takaji; and Fujiwara, Takao, to Minolta Camera Kabushiki Kaisha. Residual toner removing apparatus. 3,942,889, Cl. 355-15.000.
Kurosaki, Kiichiro, to Sanwa Seiki Kabushiki Kaisha. Electric hand nibbling machine. 3,942,250, Cl. 30-241.000.
Kurz, Gunter: *See—*
Besenmatter, Walter; Muszumanski, Trude; and Kurz, Gunter, 3,942,874.
Kuwabara, Motosuke: *See—*
Moriyama, Hiromi; Kuwabara, Motosuke; Tsuruda, Tadao; and Hamada, Tatuo, 3,943,299.
Kuwabara, Seishi: *See—*
Tsumita, Toru; and Kuwabara, Seishi, 3,943,119.
Kuznetsov, Sergei Ivanovich: *See—*
Korenkov, Vladimir Nikolaevich; Romanenko, Vitaly Ivanovich; Kuznetsov, Sergei Ivanovich; and Voronov, Jury Viktorovich, 3,943,055.
Kvasnevsky, Igor Porfirievich: *See—*
Ginzburg, Arkady Savelievich; Gurevich, Genrikh Georgievich; Kirshtein, Generik Khaimovich; Kvasnevsky, Igor Porfirievich; Yakushonok, Vladimir Ivanovich; and Levin, Mikhail Naumovich, 3,942,377.
Kyker, Gary Stephen; and Antkowiak, Thomas Anthony, to Firestone Tire & Rubber Company, The. Poly(fluoroalkoxyphosphazenes). 3,943,088, Cl. 260-30.60R.
La Cellophane: *See—*
Quang, Pham Kim, 3,943,418.
La Telemechanique Electrique: *See—*
Juery, Gerard, 3,943,307.
LaBate, Micheal Donald. Submerged desulphurization device and method. 3,942,775, Cl. 266-34.00T.
LaBombard, Richard George: *See—*
Williams, Edward George; and LaBombard, Richard George, 3,942,349.
Lace, Melvin Arthur, to Motorola, Inc. Biasing system for SCR regulator. 3,943,424, Cl. 320-64.000.
Lachmann, Burkhard: *See—*
Margotte, Dieter; Lachmann, Burkhard; Vernaleken, Hugo; Rudolph, Hans; and Cohnen, Wolfgang, 3,943,094.
Lacotte, Jean Pierre: *See—*
d'Auria, Luigi; Chevalier, Guy; Favreau, Michel; Huignard, Jean Pierre; Lacotte, Jean Pierre; and Puech, Claude, 3,943,559.
Ladouceur, Harold A.: *See—*
Goodsmith, Dale H.; and Ladouceur, Harold A., 3,942,235.
Lage, James R. Process and arrangement for producing a strong turbulence in at least one fluid or quasi-fluid medium. 3,942,766, Cl. 259-4.000.
Lagomarsino, Max: *See—*
Albertini, Eugene J.; and Lagomarsino, Max, 3,943,526.
La Grouw, Coenraad Maria; Van Den Wittenboer, Cornelus Wilhelmus Theresia; and Hubers, Hendrik Jan, to U.S. Philips Corporation. Method of sealing adjoining parts of an evacuated vessel with solder glass. 3,942,993, Cl. 106-53.000.
Lain, Horton W.: *See—*
Johnson, Virgil E., Jr.; Etter, Robert J.; Lain, Horton W.; Stephens, Larry K.; and Van Dyke, Peter, 3,942,463.
Lamberti, Vincent, to Lever Brothers Company. Esters of carboxymethyloxysuccinic acid and derivatives thereof. 3,943,165, Cl. 260-484.00P.
Landholm, Richard A.; Haase, Jan R.; and Krutak, James J., Sr., to Eastman Kodak Company. Photographic materials with ballasted, alkali cleavable azo dyes. 3,942,987, Cl. 96-73.000.
Lane, Derek. Automatic pet feeding apparatus. 3,942,478, Cl. 119-51.120.
Langdon, Roy A., to Beloit Corporation. Twin chambered gas distribution system for melt blown microfiber production. 3,942,723, Cl. 239-135.000.
Lange, Karl Heinz, to Balda-Werke. Locking means for camera. 3,943,537, Cl. 354-288.000.
Langhans, Walter; Uhlmann, Otto; and Stephan, Norbert, to Kabel-und Metallwerke Gutehoffnungshutte AG. Method of making seamless metal tubes. 3,942,352, Cl. 72-275.000.
Lanning, Walter C., to Sperry Rand Corporation. Radix converter utilizing automata. 3,943,350, Cl. 235-155.000.
Larson, Lawrence L.: *See—*
Ruger, William B.; and Larson, Lawrence L., 3,942,279.
Lartigau, Guy: *See—*
Bost, Pierre-Etienne; Costantini, Michel; Jouffret, Michel; and Lartigau, Guy, 3,943,179.
Lattion, Andre, to Rieter Machine Works, Ltd. Method and apparatus for forming reserve windings during a bobbin change on a spinning machine. 3,942,731, Cl. 242-18.0PW.
Laubli, Fritz, to Sulzer Brothers Limited. Process for regulating a steam generator and a regulatory means therefor. 3,942,483, Cl. 122-448.00R.
Lauren, Unto Antero, to A. Ahlstrom Osakeyhtio. Sheet laying apparatus. 3,942,786, Cl. 271-177.000.
Lawrence, James Philip; and Gardner, James Dennis, to Firestone Tire & Rubber Company, The. Tire lubricating device. 3,942,573, Cl. 152-330.00L.
Lawrence Peska Associates, Inc.: *See—*
Shankel, John C.; and Shankel, Marilou, 3,942,797.
Lawson, Jimmie B.: *See—*
Farmer, Robert, III; Lawson, Jimmie B.; and Sawyer, Webster M., Jr., 3,943,160.
Lazarev, Grigory Bentsionovich: *See—*
Tolstov, Jury Georgievich; Skorovarov, Vladimir Efremovich; Grinshtein, Boris Ilich; Stepanova, Valentina Gavrilovna; Bashkatov, Ivan Pavlovich; Vinitsky, Jury Danilovich; Balyasinsky, Valery Ottovich; Zhmurov, Valery Pavlovich; Natalkin, Alexandr Venediktovich; and Lazarev, Grigory Bentsionovich, 3,943,427.
Lebrun, Roger, to Saft-Societe des Accumulateurs Fixes et de Traction. Battery of storage cells. 3,943,007, Cl. 136-170.000.
Lech, Joseph Martin: *See—*
Haugsjaa, Paul Osborne; McNeill, William Henry; Regan, Robert James; and Lech, Joseph Martin, 3,943,402.
Haugsjaa, Paul Osborne; Regan, Robert James; McNeill, William Henry; and Lech, Joseph Martin, 3,943,403.
McNeill, William Henry; Haugsjaa, Paul Osborne; Regan, Robert James; and Lech, Joseph Martin, 3,943,404.
Lefort, Marcel: *See—*
Bakassian, Georges; Gay, Michel; and Lefort, Marcel, 3,943,099.
Legueu, Paul Etienne Rene. Gear box with integral differential. 3,942,386, Cl. 74-333.000.
Lehmann, Hans; Girardin, Roger; Morf, William; and Delpretti, Roger, to Ateliers des Charmilles, S.A. Wire electro-erosion machining apparatus. 3,943,322, Cl. 219-69.00E.

Lehmberg, Robert H., to United States of America, Navy. Optical pulse compression and shaping system. 3,943,457, Cl. 330-4.300.
Lehtinen, Timo Pellervo, to Oulu Osakeyhtio. Method of isomerizing fatty acids having an isolated diene structure and disproportionating rosin acids having conjugated diene structure. 3,943,118, Cl. 260-97.500.
Lei, George Y.: *See*—
Economy, James; and Lei, George Y., 3,942,947.
Lemaire, Pierre. Device for handling a load bucket removably mountable on a vehicle. 3,942,664, Cl. 214-505.000.
Le Marchand, Claude; and Courbot, Pierre, to Societe Anonyme D.B.A. Friction pad mounting means for a disc brake caliper. 3,942,612, Cl. 188-73.600.
Lemelson, Jerome H. System and method for recording and reproducing video information on a card. 3,943,563, Cl. 360-35.000.
Le Minez, Jean-Jacques: *See*—
Schein, Charles; and Le Minez, Jean-Jacques, 3,943,086.
Lennart Wallen & Co AB: *See*—
Wallen, Lennart E. O., 3,943,033.
Wallen, Lennart E. O., 3,943,034.
Lennox Industries Inc.: *See*—
Cawley, Richard E., 3,942,912.
Lensel, Robert M.: *See*—
Bourrie, Georges E.; and Lensel, Robert M., 3,942,828.
Lenz, Werner: *See*—
Raiff, Siegfried; and Lenz, Werner, 3,942,259.
Leonard, Ralph R.; and Taylor, Ted J., to Industrial Analytics Inc. Torque limiting device. 3,942,337, Cl. 64-29.000.
Leoni, Ray D.: *See*—
Stone, Robert A.; and Leoni, Ray D., 3,942,387.
Lepage, Jean-Paul; and Glorieux, Jean-Marie. Apparatus for removing bottle caps. 3,942,395, Cl. 81-3.200.
Lepley, James W., to Flying Dutchman, Inc. Material dislodging means for silo. 3,942,656, Cl. 214-17.0DA.
Lester, Fritz O., to Lester, Liane E. Double eccentric lock. 3,942,826, Cl. 285-178.000.
Lester, Liane E.: *See*—
Lester, Fritz O., 3,942,826.
Leuchs, Ottmar, to Kabel-und Metallwerke Gutehoffnungshuette AG. Fireproof self extinguishing composition. 3,943,087, Cl. 260-30.60R.
Lever Brothers Company: *See*—
Lamberti, Vincent, 3,943,165.
Levering, Paul D., to Dana Corporation. Tandem axle anti-skid system. 3,942,845, Cl. 303-21.0CH.
Levi Strauss & Co.: *See*—
Marchio, Douglas R.; and Marchio, Marino J., 3,942,735.
Levin, Mikhail Naumovich: *See*—
Ginzburg, Arkady Savelievich; Gurevich, Genrikh Georgievich; Kirshtein, Generik Khaimovich; Kvasnevsky, Igor Porfirievich; Yakushonok, Vladimir Ivanovich; and Levin, Mikhail Naumovich, 3,942,377.
Lewis, Nathanial H. Upright bike bar. 3,942,822, Cl. 280-289.000.
Li, Norman N., to Exxon Research & Engineering Co. Blood oxygenation process. 3,942,527, Cl. 128-214.00R.
Li, Yi-Sheng; Perry, Eugene N.; Jagow, Robert B.; and Wagner, Phillip A., to United States of America, Interior. Emergency breather apparatus. 3,942,524, Cl. 128-147.000.
Licentia Patent-Verwaltungs G.m.b.H.: *See*—
Krumrein, Gerhard; and Kuhlmann, Joachim, 3,943,384.
Siegert, Heiner; and Ristow, Ulrich, 3,943,037.
Lietz, Manfred: *See*—
Jaecklin, Andre A.; Cornu, Josef; and Lietz, Manfred, 3,943,549.
Lind, Roland, to Onsojoplast AB. Swimming plate with handle. 3,942,205, Cl. 9-307.000.
Lindblad, Oskar Lennart. Safety belt for vehicles. 3,942,820, Cl. 280-150.0SB.
Linder, Ernst; and Schuster, Gregor, to Robert Bosch GmbH. Fuel metering system. 3,942,493, Cl. 123-119.00D.
Lindner, Marvin T., to Eaton Corporation. Dispenser assembly. 3,942,685, Cl. 222-129.100.
Lindsey, Richard W. Optical data processing system. 3,943,021, Cl. 156-180.000.
Lingert, Ralph E.: *See*—
Keyes, Richard E.; and Lingert, Ralph E., 3,942,457.
Lisa Rosenblatt: *See*—
Herzfeld, Fred, 3,942,423.
Litronix, Inc.: *See*—
Murray, Roger W., 3,942,243.
Litton Systems, Inc.: *See*—
Timmermeyer, Leo C.; Davis, Samuel; and Knight, William J., 3,943,414.
Livingston, Richard Donnan, to Du Pont de Nemours, E. I., and Company. Acid dyeable yarn from polyamide having N,N'-di (3-aminopropyl)piperazine moiety units. 3,943,095, Cl. 260-45.70P.
Loeser, Edward A. Non-kinking intravenous tube loop device. 3,942,528, Cl. 128-214.00R.
Loewe-Opta GmbH: *See*—
Frank, Egon; and Steiger, Klaus, 3,943,565.
Loewenberg, Gustav: *See*—
Fitterer, Horst; Woweries, Uwe; Loewenberg, Gustav; and Gaiser, Dieter, 3,942,744.
Logan, Zack H.: *See*—
Helterbrand, Arlen; and Logan, Zack H., 3,942,763.
Logemann Brothers Company: *See*—
Schmalz, Roman; and Wolf, Robert J., 3,942,429.
Logsdon, Hillard Glenn, to Aeronca, Inc. Wide range adjustable air volume regulator. 3,942,552, Cl. 137-517.000.
Lohrer, Leo, to United States Steel Corporation. Sliding gate with spring biased bolts for sealing. 3,942,690, Cl. 222-512.000.
Lombardo, Gus F., to International Sporting Goods, Inc. Baseball. 3,942,793, Cl. 273-26.00R.
Long, David K., to Fairchild Camera and Instrument Corporation. Occupancy detector apparatus for automotive safety systems. 3,943,376, Cl. 307-116.000.
Longhenry, David K., to Pfizer, Inc. Calibrating device for light scatter photometering instrument. 3,942,899, Cl. 356-234.000.
LoPresti, Arthur; and Baumann, Robert P., to United States of America, Army. High volumetric energy smokeless solid rocket propellant. 3,943,209, Cl. 264-3.00B.
Lord Corporation: *See*—
Olowinski, Edward J., 3,942,314.
Lorenzo, Roberto D., to Texas Instruments Incorporated. Differential displacement thermosensing device. 3,942,380, Cl. 73-362.300.
Louderback, Allan L.; and Fontana, Anthony J., to Baxter Laboratories, Inc. Determining homogeneity of clinical controls. 3,943,364, Cl. 250-303.000.
LTV Aerospace Corporation: *See*—
Nelson, Roy A., 3,942,449.
Lubrizol Corporation, The: *See*—
Hoke, Donald Irvin, 3,943,114.
Lucas, Paul A.: *See*—
Ackley, Kenneth E.; Eburn, William H., Jr.; and Lucas, Paul A., 3,942,416.
Luce, David A., to Moog Music, Inc. Signal generator for electronic musical instrument, employing variable rate integrator. 3,943,456, Cl. 328-185.000.
Ludeling, Dietrich K.: *See*—
Richter, Hans K.; and Ludeling, Dietrich K., 3,943,250.
Lueders, Robert E.: *See*—
Moreau, Eugene J.; Opalanko, Richard S.; Schapiro, Norman; and Lueders, Robert E., 3,942,974.
Lummus Company, The: *See*—
Schoonman, Willem, 3,942,588.
Lundberg, Karl Bengt Hakan, to Telefonaktiebolaget L M Ericsson. Procedure to watch several radio channels at radio communication. 3,943,444, Cl. 325-25.000.
Lundy, Jack W., to Esquire, Inc. Luminaire latch and hinge. 3,943,355, Cl. 240-147.000.
Luotolainen, Reijo, to Oy Wartsila Ab. Disc cylinder lock. 3,942,346, Cl. 70-366.000.
Lupkas, Raymond Robert, to Pitney-Bowes, Inc. Computer responsive supplemental printer. 3,942,436, Cl. 101-93.430.
Luzi, Mark V. Downrigger for fishing. 3,942,737, Cl. 242-107.100.
Luzzi, John J.: *See*—
Spivack, John J.; and Luzzi, John J., 3,943,102.
Lyghounis, Evangelo, to Societa Italiana Telecomunicazioni Siemens S.p.A. Compander for TDM telecommunication system. 3,943,466, Cl. 333-14.000.
Lyles, Bobby J., to Thiokol Corporation. Rocket assisted projectile. 3,942,443, Cl. 102-49.300.
Lyu, Seung W.; and Martin, Donald, to National Can Corporation. Wall construction for containers. 3,942,673, Cl. 220-66.000.
Ma, James Ju Luan; and Goland, Yaacov, to Joy Manufacturing Company. Damper valve. 3,942,758, Cl. 251-85.000.
Maasberg, Wolfgang, to Woma-Apparatebau, Wolfgang Maasberg & Co. GmbH. Washing and vacuuming vehicle construction. 3,942,214, Cl. 15-320.000.
Machlett Laboratories, Inc., The: *See*—
Naill, Eugene J., 3,943,393.
Maeda, Kunitaka: *See*—
Kimura, Koya; and Maeda, Kunitaka, 3,943,443.
Maeda, Nobutaka; and Tsukamoto, Hidehiko, to Mitsubishi Jukogyo Kabushiki Kaisha. Cutter dies for the cross rolling machine. 3,942,348, Cl. 72-71.000.
Magara, Hideki: *See*—
Hirata, Yasuhiro; Kobayashi, Shoichi; Yamaguchi, Nobuo; Saito, Katshuhiko; Kimura, Mamoru; Iwasa, Yoshitel; Ueda, Masatoshi; and Magara, Hideki, 3,942,291.
Magel, Inge: *See*—
Barth, Mathias Otto; and Magel, Inge, 3,942,391.
Magna Mir, Inc.: *See*—
Portner, Robert; and Miller, Phillip, 3,942,869.
Magnetic Controls Company: *See*—
Hagedorn, Guenter E. W., 3,943,305.
Mahaffey, Derek W.: *See*—
Drummond, James E.; Chang, David B.; and Mahaffey, Derek W., 3,942,975.
Maier, Dennis A., to United States of America, Air Force. Self referencing retransmitting alignment sensor for a collimated light beam. 3,942,894, Cl. 356-153.000.
Maier, Elmar, to Hilti Aktiengesellschaft. Safety device for a fastening element setting gun. 3,942,700, Cl. 227-8.000.
Maillet, Edgard Jacques. Hydro or oleopneumatic devices. 3,942,323, Cl. 60-413.000.
Maksymiak, John; and Hoffman, Daniel S., to Xerox Corporation. Stepped transfer roller. 3,942,888, Cl. 355-3.00R.
Malaspina, Francis P.: *See*—
Honer, Harold Nickolas; Malaspina, Francis P.; and Martini, William J., 3,943,004.
Malinow, Sidney: *See*—
Strandine, Eldon J.; and Malinow, Sidney, 3,942,222.

Mallory, Edwin E., to National-Standard Company. Tire building stitcher assembly. 3,943,026, Cl. 156-410.000.
Malone, Warren L., to United States of America, Navy. Secure active sensor. 3,942,890, Cl. 356-4.000.
Mandusky, Jack C.; and Riddle, Neville L., to Hoover Ball and Bearing Company. Seat spring member. 3,942,777, Cl. 267-102.000.
Maner, Ronald J.; and Weaver, Max A., to Eastman Kodak Company. Monoazo compounds from 3-aminobenzisothiazoles and substituted α-naphthylamine couplers. 3,943,121, Cl. 260-158.000.
Manganello, Samuel J.: *See*—
Kachik, Robert H.; Manganello, Samuel J.; and Pignocco, Arthur J., 3,942,578.
Mangei, Bernd: *See*—
Winkler, Bruno; Mangei, Bernd; and Fritz, Dieter, 3,943,262.
Manthiram, Chockalingam: *See*—
Roggenstein, Edwin O.; Andrews, Donald Allen; and Manthiram, Chockalingam, 3,942,369.
Marchio, Douglas R.; and Marchio, Marino J., to Levi Strauss & Co. Viewing table. 3,942,735, Cl. 242-56.00R.
Marchio, Marino J.: *See*—
Marchio, Douglas R.; and Marchio, Marino J., 3,942,735.
Marcotte, Raymond L., to General Electric Company. Gallium-phosphorus simultaneous diffusion process. 3,943,016, Cl. 148-189.000.
Margotte, Dieter; Lachmann, Burkhard; Vernaleken, Hugo; Rudolph, Hans; and Cohnen, Wolfgang, to Bayer Aktiengesellschaft. Polymers and copolymers based on alkenoyl-oxybenzylidene-malonic esters as UV-absorbers and polymers stabilized therewith. 3,943,094, Cl. 260-42.210.
Mariner, Charlie D.: *See*—
Shlesinger, Bernard Edward, Jr.; and Mariner, Charlie D., 3,943,474.
Marino, Frank P., to Interrad Corporation. Spray booth for electrostatic powder coating. 3,942,420, Cl. 98-115.05B.
Marion Power Shovel Company, Inc.: *See*—
Trenary, Bryant, 3,942,662.
Marjo Systems, Inc.: *See*—
Waldman, Martin, 3,943,485.
Markoo, Eric L.; Strand, Tore G. H.; and Sandell, Thorsten W., to Fabriksaktiebolaget EKA. Multilayered flexible abrasive containing a layer of electroconductive material. 3,942,959, Cl. 51-295.000.
Marks, Neal J.: *See*—
DePriester, Donald J.; and Marks, Neal J., 3,942,600.
Marsh Products, Inc.: *See*—
Marsh, Richard Eugene, 3,943,332.
Marsh, Richard Eugene, to Marsh Products, Inc. Cooking device. 3,943,332, Cl. 219-520.000.
Marsh, Walter W.: *See*—
Church, Armistead S.; Smick, William H., III; and Marsh, Walter W., 3,942,623.
Marshall, Geoffrey; and Riseley, Eric Ivan, to Imperial Chemicl Industries, Ltd. Process for uniformly drawing polyethylene terephthalate filaments to form high shrinkage fibers. 3,943,138, Cl. 264-290.00T.
Marshall, Lowell K.: *See*—
Friedel, William C., Jr.; Dietz, Charles F.; and Marshall, Lowell K., 3,942,590.
Marshalleck, Easton O.: *See*—
Neef, William E.; and Marshalleck, Easton O., 3,942,783.
Martin, Donald: *See*—
Lyu, Seung W.; and Martin, Donald, 3,942,673.
Martin, Earl C.; and Bruns, Lester E., to United States of America, Energy Research and Development Administration. Method for improving the extraction properties of a tributyl phosphate solution. 3,943,204, Cl. 260-990.000.
Martin Engineering Co.: *See*—
Stetson, Harold M., 3,942,684.
Martin, Fred David; and Boothe, Jerry Emile, to Calgon Corporation. Friction reducing. 3,943,060, Cl. 252-8.55R.
Martin, Fred David: *See*—
Adams, Sally L.; Cook, Michael M.; and Martin, Fred David, 3,943,083.
Martin Processing Company, Incorporated: *See*—
Hermes, Julius, 3,943,105.
Martin, Thomas B.; and Herscher, Marvin B., to Threshold Technology, Inc. Apparatus and method for recognizing words from among continuous speech. 3,943,295, Cl. 179-1.05A.
Martini, William J.: *See*—
Honer, Harold Nickolas; Malaspina, Francis P.; and Martini, William J., 3,943,004.
Martino, Anthony P.: *See*—
Gandi, Robert A.; Martino, Anthony P.; and Pellegrino, Robert G., 3,942,634.
Martino, Germain: *See*—
Chan, Trinh Dinh; Martino, Germain; Sajus, Lucien; and Roux-Guerraz, Claude, 3,943,067.
Martinson, Lloyd William, to RCA Corporation. Data processor reorder random access memory. 3,943,347, Cl. 235-152.000.
Maschinenfabrik Andritz Actiengesellschaft: *See*—
Wieser, Rudolf, 3,942,584.
Maschinenfabrik Andritz AG: *See*—
Wohlfarter, Alois, 3,942,433.
Maschinenfabrik Hennecke GmbH: *See*—
Schmitzer, Willi; Raffel, Reiner; Althausen, Ferdinand; and Proksa, Ferdinand, 3,942,925.
Maschinenfabrik Zuckermann Komm.Ges.: *See*—
Schmidt, Erich, 3,942,288.
Schmidt, Erich, 3,942,566.
Maserjian, Joseph: *See*—
United States of America, National Aeronautics and Space Administration; and Maserjian, Joseph, 3,943,442.
Massa, Donald P.: *See*—
Massa, Frank, 3,943,388.
Massa, Frank, to Dellorfano, Fred M., Jr.; and Massa, Donald P. Electroacoustic transducer of the flexural vibrating diaphragm type. 3,943,388, Cl. 310-8.200.
Massey-Ferguson Services N.V.: *See*—
Quick, Donald Jonathon, 3,942,307.
Masuda, Isao; and Yamazaki, Masami, to Victor Company of Japan, Ltd. Abnormal sound eliminating system in record disc reproducing apparatus. 3,943,303, Cl. 179-100.40D.
Masuda, Noboru; Nishino, Yu; and Takiguchi, Hisashi, to Denki Onkyo Co., Ltd. Galvano-magnetic effect device. 3,943,481, Cl. 338-32.00R.
Mathais, Henri: *See*—
Schirmann, Jean-Pierre; Mathais, Henri; Tellier, Pierre; and Weiss, Francis, 3,943,132.
Tellier, Pierre; Schirmann, Jean-Pierre; Mathais, Henri; and Weiss, Francis, 3,943,152.
Matsumoto, Yoshio; and Okamoto, Keiichi, to Hitachi, Ltd. Apparatus for relatively positioning a plurality of objects by the use of a scanning optoelectric microscope. 3,943,359, Cl. 250-201.000.
Matsumura, Yuji; and Mitsudomi, Hiroyuki, to Osaka Gas Kabushiki Kaisha. Flat flame burner. 3,942,939, Cl. 431-215.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Hirai, Kazumi, 3,943,318.
Hirai, Kazumi; and Fujitani, Yoshitomo, 3,943,319.
Ichinose, Akira; and Karube, Norio, 3,943,461.
Izura, Yoshiteru; and Okano, Keisuke, 3,943,558.
Kimura, Takeji; Sembokuya, Iwajiro; Hozumi, Hideo; and Oyama, Tomio, 3,943,280.
Nagamoto, Schun-ichi, 3,943,317.
Shibata, Morio; Sawamura, Fujio; and Funatsu, Kunio, 3,943,421.
Yamashita, Toshio; Kotake, Toshiro; Hasegawa, Nobuo; Yoshida, Manabu; and Kitamura, Saburo, 3,943,337.
Matsuyama, Teruko; Nishida, Tadao; and Uraya, Toru, to Kanebo Ltd. Portable fire-hose. 3,942,636, Cl. 206-349.000.
Matzinger, August; and Benz, Gottlieb. Method of and apparatus for packaging an annular object. 3,942,298, Cl. 53-13.000.
May, Colin Paul; and Street, John, to Instron Limited. Coarse and fine electronic ramp function generator. 3,943,342, Cl. 235-150.530.
Mayama, Takeshi: *See*—
Kobayashi, Toshiyuki; Sunazuka, Kensuke; Mayama, Takeshi; and Okada, Akira, 3,943,238.
Mayhew, John T. White rust prevention for zinc coated surfaces. 3,942,989, Cl. 106-14.000.
McAlister, Edgar O. Paint guide apparatus. 3,942,472, Cl. 118-504.000.
McAllister Brothers Inc.: *See*—
Hankin, Donald Cameron, 3,942,458.
McCain, David L.; and Dahl, Hilbert D., to Continental Oil Company. Slurry handling system. 3,942,841, Cl. 302-14.000.
McCarroll, Alan F., to Xerox Corporation. Drive mechanism for a roll fuser employed in a copier apparatus. 3,942,887, Cl. 355-3.00R.
McClelland, Theodore M., III; and Doby, William P., to Westinghouse Electric Corporation. Direct input photoelectric pulse initiator for meter telemetry and recording systems. 3,943,498, Cl. 340-206.000.
McCullough, Thomas W.: *See*—
Newman, Ritchey O., Jr.; and McCullough, Thomas W., 3,942,331.
McDaniel, John E.: *See*—
Dickey, Clarence A.; and McDaniel, John E., 3,942,903.
McDonnell Douglas Corporation: *See*—
McGuire, Joseph C., 3,942,232.
McDonough, Cletus G., to Molex Incorporated. Connector assembly. 3,942,860, Cl. 339-217.00S.
McDougal, Allan R.: *See*—
United States of America, National Aeronautics and Space Administration; McDougal, Allan R.; and Norman, Robert M., 3,942,398.
McDowell-Wellman Engineering Company: *See*—
Modliszewski, Francis R., 3,942,451.
McElroy, Lucian Grant: *See*—
Day, David Roger; and McElroy, Lucian Grant, 3,942,430.
McFall, Robert A.: *See*—
Engel, Simon L.; and McFall, Robert A., 3,942,878.
McGinniss, Vincent D.: *See*—
De Sorga, Miksa; and McGinniss, Vincent D., 3,943,046.
McGoldrick, Gilbert A.: *See*—
Carroll, James C.; Curry, Johnny R.; Jorgensen, George N.; King, Frank D.; and McGoldrick, Gilbert A., 3,943,272.
McGregor, Alan P.: *See*—
Schidlowski, Juan Carlos; and Walker, Stephen F., 3,942,707.
McGuffin, William George, to RCA Corporation. Symmetrical odd modulus frequency divider. 3,943,379, Cl. 307-225.00R.
McGuire, Joseph C., to McDonnell Douglas Corporation. Vent structure fabrication method. 3,942,232, Cl. 29-157.00C.
McInerney, Michael J.; and Brady, Robert T., to Vapor Corporation. Hot water generator and method for shock testing fabricated piping components. 3,942,355, Cl. 73-15.00R.
McIntosh, Colin Leslie, to Du Pont de Nemours, E. I., and Company. Alkoxy carboxycarbonylphosphonic acid esters. 3,943,201, Cl. 260-941.000.

McKay, Douglas H. Elevating device for a facial tissue box. 3,942,682, Cl. 221-58.000.

McLeroy, Edward G., Jr.: *See—*
Murphree, Francis J.; Warner, Henry L.; and McLeroy, Edward G., Jr., 3,943,482.

McNair, Samuel L., to Dazey Products Co. Foot massager. 3,942,520, Cl. 128-24.100.

McNeill, William Henry; Haugsjaa, Paul Osborne; Regan, Robert James; and Lech, Joseph Martin, to GTE Laboratories Incorporated. Helical coupler for use in an electrodeless light source. 3,943,404, Cl. 315-39.000.

McNeill, William Henry: *See—*
Haugsjaa, Paul Osborne; Regan, Robert James; and McNeill, William Henry, 3,943,401.
Haugsjaa, Paul Osborne; McNeill, William Henry; Regan, Robert James; and Lech, Joseph Martin, 3,943,402.
Haugsjaa, Paul Osborne; Regan, Robert James; McNeill, William Henry; and Lech, Joseph Martin, 3,943,403.

Mead Corporation, The: *See—*
Perry, John H., 3,942,941.

Mechanische Weberie GmbH.: *See—*
Hoffbauer, Hans Gunther; and Kaufmann, Karl, 3,942,868.

Medow, Norman B.; and Greco, Joseph J. Ophthamological use of hydrastis compounds. 3,943,251, Cl. 424-258.000.

Meginnis, Charles E. Sight glass assembly. 3,942,881, Cl. 350-319.000.

Mego Corporation: *See—*
Kublan, Neal, 3,942,284.

Meier, Rene: *See—*
Gagneux, Andre; Heckendorn, Roland; and Meier, Rene, 3,943,145.

Meija Seika Co., Ltd.: *See—*
Kobayashi, Toshiyuki; Sunazuka, Kensuke; Mayama, Takeshi; and Okada, Akira, 3,943,238.

Meijer, Robert S., to Multi-State Devices, Ltd. Temperature control circuit. 3,943,331, Cl. 219-499.000.

Melchior, Gerald, to Compagnie Industrielle des Telecommunications Cit-Alcatel. High voltage rapid switching circuit. 3,943,453, Cl. 328-123.000.

Merck & Co., Inc.: *See—*
Christensen, Burton G.; Fordice, Michael W.; and Johnston, David B. R., 3,943,153.

Mercurio, Anthony F.: *See—*
Fogel, Arnold W.; and Mercurio, Anthony F., 3,943,242.

Mermelstein, Robert: *See—*
Jones, Lewis O.; and Mermelstein, Robert, 3,942,979.

Merrell, Richard G.: *See—*
Hendrickson, Melvin C.; and Merrell, Richard G., 3,943,449.

Merriman, Peter: *See—*
Fishbein, John; Bell, Raymond William Henry; Clarke, Anthony James; and Merriman, Peter, 3,943,075.

Mery, Jean-Claude: *See—*
Warlop, Fernand; and Mery, Jean-Claude, 3,942,827.

Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
Kranz, Walter; and Tillmann, Heinz, 3,942,559.

Meszaros, Bela: *See—*
Vizelyi, Gabor; and Meszaros, Bela, 3,943,327.

Metallurgie Hoboken-Overpelt: *See—*
Dompas, John M.; Ghyselen, Jean L. J. E.; and Mortier, Rene E. J., 3,942,582.

Mevel, Jean-Claude: *See—*
Delaplace, Lucien; and Mevel, Jean-Claude, 3,942,945.

Meyer, Horst: *See—*
Bossert, Friedrich; Meyer, Horst; and Vater, Wulf, 3,943,140.

Meyer, James A., to Brunswick Corporation. Two-cycle piston-cylinder combination. 3,942,489, Cl. 123-73.0PP.

Meyer, Robert; and Scher, Robert S., to Teledyne, Inc. Linear digital readout assembly for milling machines and the like and means for mounting same. 3,942,895, Cl. 356-169.000.

Meyer, Roy Edwin, to International Telephone and Telegraph Corporation. Tubular pole with base connection. 3,942,296, Cl. 52-296.000.

Meyer, Willy; Bohner, Beat; and Dawes, Dag, to Ciba-Geigy Corporation. Certain thiadiazolyl phosphorus acid esters. 3,943,144, Cl. 260-302.00E.

Meylan, Pierre, to BBC Brown Boveri & Company Limited. Two-shell casing for fluid flow machine. 3,942,907, Cl. 415-126.000.

Miceli, John J. Drapery sizing apparatus. 3,942,402, Cl. 83-418.000.

Michigan Carton Company: *See—*
Bundy, Patrick L.; and Harrison, Ross R., 3,942,712.

Microform Data Systems, Inc.: *See—*
Kool, Bram, 3,942,885.

Mid-Continent Pipeline Equipment Company: *See—*
Smith, Carl K., 3,942,772.

Middleton, William J., to Du Pont de Nemours, E. I., and Company. Copolymers of polyhalogenated isocyanates. 3,943,112, Cl. 260-80.30R.

Midland-Ross Corporation: *See—*
Gross, Dario R., 3,942,808.

Mifuji Iron Works, Ltd.: *See—*
Ito, Shozo, 3,942,956.

Mikami, Itsuo: *See—*
Yoshizawa, Shigeru; Saito, Nobuo; Mikami, Itsuo; and Kamoshita, Gen-ichi, 3,943,497.

Miles, Brynley John: *See—*
Thomson, Alan Russell; and Miles, Brynley John, 3,943,072.

Miles, Melvin H., to United States of America, Navy. Silver sulfide cathode for liquid ammonia batteries and fuel cells containing sulfur and H_2S in the electrolyte. 3,943,001, Cl. 136-6.0LN.

Miley, Frank P., to United States of America, Navy. Counter-countermeasure guidance system. 3,943,515, Cl. 343-18.00E.

Milgo Electronic Corporation: *See—*
Ragsdale, Robert Gordon; and Parrish, Henry Howard, 3,943,285.

Miller, Carl T., to Oregon Graduate Center for Study and Research. Dimensional measurement of remote objects using projected light raster. 3,943,361, Cl. 250-236.000.

Miller, Frederick C.: *See—*
Whittaker, Mack P.; Miller, Frederick C.; and Grindstaff, Lloyd I., 3,943,213.

Miller, Irving Lionel: *See—*
Dillinger, James Roland; Herald, Robert Frederick; and Miller, Irving Lionel, 3,942,620.

Miller, Phillip: *See—*
Portner, Robert; and Miller, Phillip, 3,942,869.

Mills, Kenneth Wilson. Disposable bedpan insert. 3,942,196, Cl. 4-112.000.

Millsapps, Stuart C., Jr., to Hughes Tool Company. Lubricant pressure relief valve for earth penetrating tools. 3,942,596, Cl. 175-227.000.

Minard, James R., to Borg-Warner Corporation. Bearing and assembly. 3,942,850, Cl. 308-238.000.

Mindheim, Daniel J., deceased; and by Mindheim, Joyce E., executrix. Safety socket assembly. 3,942,856, Cl. 339-74.00R.

Mindheim, Joyce E., executrix: *See—*
Mindheim, Daniel J., deceased; and Mindheim, Joyce E., executrix, 3,942,856.

Mine, Akihiko: *See—*
Satomi, Takeo; Mukai, Kunio; Mine, Akihiko; Hino, Naganori; and Tateishi, Kohshi, 3,943,203.

Minear, James P. Timing circuit. 3,943,415, Cl. 317-141.00S.

Mingus, John; and Mingus, Mary. Pallet-less drums. 3,942,670, Cl. 220-23.400.

Mingus, Mary: *See—*
Mingus, John; and Mingus, Mary, 3,942,670.

Minnesota Mining and Manufacturing Company: *See—*
Di Blas, Umberto; and Knirsch, Franco, 3,942,983.
Glennie, Brian L., 3,942,637.
Newman, Norman; and Fisch, Richard S., 3,942,985.
Roche, John L., 3,942,269.
Sweeny, Norman P.; and Thom, Karl Friedrich, 3,943,146.
Thompson, Arden Ronald, 3,942,367.

Minolta Camera Kabushiki Kaisha: *See—*
Kurita, Takaji; and Fujiwara, Takao, 3,942,889.
Tanaka, Atsuyuki, 3,942,886.

Minton, Keith G., to Hoover Company, The. Nozzle with edge cleaning. 3,942,216, Cl. 15-331.000.

Mintz, Nathan Louis. Golf game apparatus. 3,942,801, Cl. 273-176.0AB.

Mirly, Raymond: *See—*
Neal, Franklin D.; and Mirly, Raymond, 3,943,507.

Mirowski, Mieczyslaw; Mower, Morton M.; and Denniston, Rollin H., III, to Mirowski, Mieczyslaw. Cardioverting device having single intravascular catheter electrode system and method for its use. 3,942,536, Cl. 128-419.00D.

Mitsche, Roy T., to Universal Oil Products Company. Manufacture of spheroidal alumina particles. 3,943,070, Cl. 252-448.000.

Mitsche, Roy T., to Universal Oil Products Company. Method of manufacturing a spheroidal reforming catalyst. 3,943,071, Cl. 252-448.000.

Mitsubishi Denki Kabushi Kaisha: *See—*
Kumano, Masayoshi, 3,943,430.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Maeda, Nobutaka; and Tsukamoto, Hidehiko, 3,942,348.

Mitsubishi Monsanto Chemical Company: *See—*
Kawagoshi, Fumio; and Moriwaki, Motohiro, 3,943,097.

Mitsudomi, Hiroyuki: *See—*
Matsumura, Yuji; and Mitsudomi, Hiroyuki, 3,942,939.

Mitsui Pharmaceuticals, Incorporated: *See—*
Tsumita, Toru; and Kuwabara, Seishi, 3,943,119.

Miyagawa, Toshio; Inoue, Norio; and Suenaga, Tadayuki, to Toyo Soda Manufacturing Co., Ltd. Chloroprene rubber composition having high thermal aging resistance and oil resistance. 3,943,193, Cl. 260-890.000.

Mizuno, Nobuyoshi: *See—*
Kawamoto, Takao; Mizuno, Nobuyoshi; and Ota, Akira, 3,943,309.

Mizutani, Keiiti: *See—*
Momiyama, Takenori; Mizutani, Keiiti; Oi, Masakazu; and Hanatani, Shinji, 3,942,934.

Mobil Oil Corporation: *See—*
Ackley, Kenneth E.; Eburn, William H., Jr.; and Lucas, Paul A., 3,942,416.
Florian, John, 3,942,671.
Olson, Robert H.; and Clayton, William J., 3,942,713.

Mocarski, Zenon R., to S.R.C. Laboratories, Inc. Variable throat nozzle. 3,942,724, Cl. 239-417.000.

Modliszewski, Francis R., to McDowell-Wellman Engineering Company. Multiple coupler engaging head for railroad car positioner. 3,942,451, Cl. 104-176.000.

Moens, Joris, to N. V. Bekaert S. A. Reinforcing wire element. 3,942,955, Cl. 29-183.500.

Mohasco Corporation: *See—*
Harrison, Kenneth S., 3,942,835.

Molex Incorporated: *See—*
McDonough, Cletus G., 3,942,860.
Molitor, Andre: *See—*
Akriche, Jean; and Molitor, Andre, 3,943,348.
Momiyama, Takenori; Mizutani, Keiiti; Oi, Masakazu; and Hanatani, Shinji, to Takeda Chemical Industries, Ltd. Mold assembly for use in packaging machine. 3,942,934, Cl. 425-342.000.
Monarch Marking Systems, Inc.: *See—*
Jenkins, William A., 3,942,754.
Monsanto Company: *See—*
Hamed, Parviz, 3,943,079.
Schleppnik, Alfred A., 3,942,761.
Turek, Michael H., 3,943,214.
Montedison S.p.A.: *See—*
Ribaldone, Giuseppe, 3,943,136.
Moog Music, Inc.: *See—*
Luce, David A., 3,943,456.
Moore, Hermus C., Jr.: *See—*
Reeve, John R., Jr.; Busse, Ralph; Walker, Elbert; Welch, Raymond L.; Moore, Hermus C., Jr.; and Jones, Milton P., 3,942,593.
Moore, Larry A.: *See—*
Hickernell, Fred S.; and Moore, Larry A., 3,943,389.
Moore, Randolph G.: *See—*
Eberhard, Everett; Gemmell, Frank S.; and Moore, Randolph G., 3,943,513.
Moran, Joseph Michael: *See—*
Feldman, Martin; and Moran, Joseph Michael, 3,943,529.
Moreau, Eugene J.; Opalanko, Richard S.; Schapiro, Norman; and Lueders, Robert E., to Kennecott Copper Corporation. Manganese nodule pelletizing. 3,942,974, Cl. 75-3.000.
Morello, Herbert: *See—*
Kinker, Donald E.; and Morello, Herbert, 3,943,335.
Morewood, William Henry: *See—*
Jebens, Robert Warren; and Morewood, William Henry, 3,943,275.
Morf, William: *See—*
Lehmann, Hans; Girardin, Roger; Morf, William; and Delpretti, Roger, 3,943,322.
Morgan, David Keith; and Heuner, Robert Charles, to RCA Corporation. Keyed comparator. 3,943,380, Cl. 307-235.00T.
Morgan, Paul Winthrop, to Du Pont de Nemours, E. I., and Company. Fiber and film-forming nuclearly-halogenated poly(1,4-benzamides). 3,943,110, Cl. 260-78.00A.
Morgardshammar Aktiebolag: *See—*
Falk, Alfons O., 3,942,628.
Moriarty, Maurice J.: *See—*
Phillips, Howard L.; and Moriarty, Maurice J., 3,942,488.
Morinaga, Yasushi; Ishizaki, Ayaaki; and Otsuka, Shin-ichiro, to Ajinomoto Co., Inc. Method for producing amino acids by culturing hydrogen-oxidizing bacteria. 3,943,038, Cl. 195-28.00R.
Morishita, Masataka; Inaba, Yoshihito; Fukushima, Mitsuru; Kobari, Sadami; Nagata, Akiho; and Abe, Jinnosuke, to Toyo Jozo Company, Ltd. Preparation of microcapsules. 3,943,063, Cl. 252-316.000.
Moriwaki, Motohiro: *See—*
Kawagoshi, Fumio; and Moriwaki, Motohiro, 3,943,097.
Moriyama, Hiromi; Kuwabara, Motosuke; Tsuruda, Tadao; and Hamada, Tatuo, to Hitachi, Ltd. Link network. 3,943,299, Cl. 179-18.0AG.
Morley, E. Dean. Tape cartridge. 3,942,734, Cl. 242-55.19A.
Morris, Earl L.; and Sally, Theodore J., to Acorn Engineering Co. Wall sleeve and plumbing installation jig. 3,942,201, Cl. 4-252.00R.
Morris, Max O., to Kathet Corporation. Telescopically and circumferentially adjustable brace. 3,942,904, Cl. 403-108.000.
Morrison, Ralph A.; and Hanson, Waldo B., to USM Corporation. Machine for forming and inserting component leads. 3,942,701, Cl. 227-90.000.
Mortensen, Louis Aackersberg. Expandable screw anchoring devices. 3,942,407, Cl. 85-71.000.
Mortier, Rene E. J.: *See—*
Dompas, John M.; Ghyselen, Jean L. J. E.; and Mortier, Rene E. J., 3,942,582.
Mosiniak, Dennis G.: *See—*
Tenteris, Ansis U.; Wetzel, Bruce W.; and Mosiniak, Dennis G., 3,942,518.
Mosler Safe Company, The: *See—*
Aultz, Thomas R.; and Kistner, Jerome L., 3,942,435.
Motley, David M.; and Cheng, King Y., to Hycom Incorporated. Apparatus and method for synchronizing a digital modem using a random multilevel data signal. 3,943,448, Cl. 325-321.000.
Motoren- und Turbinen-Union Friedrichshafen GmbH: *See—*
Dinger, Hans, 3,942,807.
Motorola, Inc.: *See—*
Beutler, Robert Russel, 3,943,378.
Byles, Theodore A., 3,942,501.
Eberhard, Everett; Gemmell, Frank S.; and Moore, Randolph G., 3,943,513.
Hickernell, Fred S.; and Moore, Larry A., 3,943,389.
Lace, Melvin Arthur, 3,943,424.
Wilson, Richard W., 3,943,556.
Mourier, Jean, to Benson. Tracing apparatus with suction paper control means. 3,943,530, Cl. 346-136.000.
Mourier, Marcel, to Rhone-Poulenc Industries. Apparatus for investigating the electrostatic properties of powders. 3,943,437, Cl. 324-32.000.
Mower, Morton M.: *See—*
Mirowski, Mieczyslaw; Mower, Morton M.; and Denniston, Rollin H., III, 3,942,536.
Mueller, Charles William; and Douglas, Edward Curtis, to RCA Corporation. SOS Bipolar transistor. 3,943,555, Cl. 357-49.000.
Muir, Samuel: *See—*
Ambrose, Alan Douglas; and Muir, Samuel, 3,942,892.
Mukai, Kunio: *See—*
Satomi, Takeo; Mukai, Kunio; Mine, Akihiko; Hino, Naganori; and Tateishi, Kohshi, 3,943,203.
Muller, Hermann, to Dravo Corporation. Method and apparatus for cooling of hot bulk materials. 3,942,263, Cl. 34-20.000.
Muller, Karl: *See—*
Christ, Alfred; Heinbockel, Wolfgang; Kahmann, Albrecht; Muller, Karl; and Kohrs, Manfred, 3,942,728.
Muller, Lothar: *See—*
Wirth, Hermann; and Muller, Lothar, 3,942,721.
Muller, Richard S.: *See—*
Russell, Lewis K.; Dao, Tich T.; and Muller, Richard S., 3,943,554.
Multi-State Devices, Ltd.: *See—*
Meijer, Robert S., 3,943,331.
Multifastener Corporation: *See—*
Goodsmith, Dale H.; and Ladouceur, Harold A., 3,942,235.
Munch, Peter: *See—*
Dany, Franz-Josef; Wortmann, Joachim; Munch, Peter; and Braun, Gunther, 3,943,194.
Mund, Konrad, to Siemens Aktiengesellschaft. Process for the manufacture of an electrode material containing silver and tungsten carbide. 3,943,005, Cl. 136-120.0FC.
Mundt, Peter Hans Ernst; Urban, Otfried; and Neuhold, Arnold. Slide frame-welding apparatus. 3,943,029, Cl. 156-443.000.
Muntz, Earl W. Projection television apparatus. 3,943,282, Cl. 178-7.910.
Murata, Hikaru; Umeda, Yasuji; Sakurai, Yasusada; and Doi, Yasuo, to Kayabakogyokabushikikaisha. Fluid control valve. 3,942,548, Cl. 137-110.000.
Murata, Tadakazu; Nohara, Akira; Sugihara, Hirosada; and Sanno, Yasushi, to Takeda Chemical Industries, Ltd. 3-(Trisubstituted benzoyl)-propionic acid. 3,943,169, Cl. 260-521.00R.
Murch, Robert M., to United States of America, Navy. Alkoxy derivatives of the adduct from phosphorus oxychloride and hexamethylphosphoramide. 3,943,196, Cl. 260-926.000.
Murch, Robert M., to United States of America, Navy. Alkoxy derivatives of the adduct from phosphorous pentachloride and hexamethylphosphoramide. 3,943,197, Cl. 260-926.000.
Murcott, Arthur William: *See—*
Neu, Max Gerhard; and Murcott, Arthur William, 3,943,270.
Murek, Josef K. High energy rate counterblow forming machine. 3,942,353, Cl. 72-354.000.
Murphree, Francis J.; Warner, Henry L.; and McLeroy, Edward G., Jr., to United States of America, Navy. Marine mine detector. 3,943,482, Cl. 340-3.00R.
Murray Corporation: *See—*
Kish, Arthur S., 3,942,333.
Murray, Ransom James; and Brown, Arthur William, to Associated Portland Cement Manufacturers Limited, The. Early strength cements. 3,942,994, Cl. 106-89.000.
Murray, Roger W., to Litronix, Inc. Ohmic contact for semiconductor devices. 3,942,243, Cl. 29-590.000.
Muskegon Tool Industries: *See—*
Gill, Geoffrey; Pratt, Donald W.; and Green, Bryant W., 3,942,905.
Musser, Harry Robert; and Jackson, Winston Jerome, Jr., to Eastman Kodak Company. Process for preparation of copolymers from polyesters and aliphatic polyformals. 3,943,189, Cl. 260-860.000.
Muszumanski, Trude: *See—*
Besenmatter, Walter; Muszumanski, Trude; and Kurz, Gunter, 3,942,874.
N L Industries, Inc.: *See—*
Glenn, James J., Jr., 3,942,374.
N. V. Bekaert S. A.: *See—*
Moens, Joris, 3,942,955.
Naarmann, Herbert; and Penzien, Klaus, to BASF Aktiengesellschaft. Self-extinguishing thermoplastic molding material. 3,943,195, Cl. 260-874.000.
Naegeli, Peter, to Givaudan Corporation. Odorant compositions containing hydrozolenones. 3,943,073, Cl. 252-522.000.
Naegeli, Peter: *See—*
Helmlinger, Daniel; and Naegeli, Peter, 3,943,177.
Nagamoto, Schun-ichi, to Matsushita Electric Industrial Company, Ltd. Microwave oven power supply circuit. 3,943,317, Cl. 219-10.55B.
Nagano, Takahiro; Kamei, Tatsuya; and Ogawa, Takuzo, to Hitachi, Ltd. Semiconductor device. 3,943,547, Cl. 357-38.000.
Nagao, Jun-ichi: *See—*
Yamamichi, Yoshikazu; and Nagao, Jun-ichi, 3,943,230.
Nagase, Tsuneyuki: *See—*
Suzukamo, Gohu; Fukao, Masami; Nagase, Tsuneyuki; and Toshioka, Horosuke, 3,943,167.
Nagata, Akiho: *See—*
Morishita, Masataka; Inaba, Yoshihito; Fukushima, Mitsuru; Kobari, Sadami; Nagata, Akiho; and Abe, Jinnosuke, 3,943,063.
Naill, Eugene J., to Machlett Laboratories, Inc., The. Stress free filament structure. 3,943,393, Cl. 313-60.000.

Nakada, Masahiko: *See—*
Kobayashi, Nobuyuki; Tanoue, Ken; and Nakada, Masahiko, 3,942,495.

Nakagawa, Kenji: *See—*
Osagawa, Masaaki; Kobayashi, Kunimitsu; and Nakagawa, Kenji, 3,942,965.

Nakamura, Matsuaki: *See—*
Tamai, Yasuo; Aonuma, Masashi; Nakamura, Matsuaki; Agawa, Hiroshi; and Akashi, Goro, 3,943,012.

Nakatomi, Shunsuke; Yamamura, Takemi; and Akiba, Yoshikazu, to Ube Industries, Ltd. Method for producing isopentene. 3,943,186, Cl. 260-683.00D.

Nakazato, Tunoru, to Nissan Motor Company Limited. Fuel tank filling inlet port device. 3,942,564, Cl. 141-348.000.

Nalband, Thomas E., to Plasma Coatings, Inc. Composite metallic roll with release surface and method of making same. 3,942,230, Cl. 29-132.000.

Nalco Chemical Company: *See—*
Hoffmann, Karl H.; and Anderson, Donald R., 3,943,171.
Newkirk, John D., 3,943,255.

Napier, Alfred. Automatic coop loader. 3,942,476, Cl. 119-21.000.

Natalkin, Alexandr Venediktovich: *See—*
Tolstov, Jury Georgievich; Skorovarov, Vladimir Efremovich; Grinshtein, Boris Ilich; Stepanova, Valentina Gavrilovna; Bashkatov, Ivan Pavlovich; Vinitsky, Jury Danilovich; Balyasinsky, Valery Ottovich; Zhmurov, Valery Pavlovich; Natalkin, Alexandr Venediktovich; and Lazarev, Grigory Bentsionovich, 3,943,427.

National Can Corporation: *See—*
Lyu, Seung W.; and Martin, Donald, 3,942,673.

National Research Development Corporation: *See—*
Bryer, Denis William, 3,942,371.
Kinnier Wilson, Alexander Bruce, 3,942,522.
Parr, Norman Lawrence, 3,942,847.

National-Standard Company: *See—*
Mallory, Edwin E., 3,943,026.

Naturin-Werk Becker & Co.: *See—*
Winkler, Bruno; Mangei, Bernd; and Fritz, Dieter, 3,943,262.

Naumann, Frederick E.: *See—*
Sutherland, Robert L.; and Naumann, Frederick E., 3,942,631.

NCR Corporation: *See—*
Kawamoto, Takao; Mizuno, Nobuyoshi; and Ota, Akira, 3,943,309.

Neal, Franklin D.; and Mirly, Raymond, to Mirly, Raymond. Vehicle back-up alarm. 3,943,507, Cl. 340-384.00E.

Neal, Kathleen T., to Penguin Pools, Inc. Multiple purpose low voltage sealed beam lamp. 3,943,354, Cl. 240-26.000.

Neef, William E.; and Marshalleck, Easton O., to Hart Schaffner & Marx. Clamping mechanism for cloth spreading machine catcher. 3,942,783, Cl. 270-30.000.

Neely, Allan B., Jr. Baled hay stack forming apparatus. 3,942,651, Cl. 214-6.00B.

Nefedov, Askold Ivanovich: *See—*
Gebel, Iosif Davydovich; Zykov, Arkady Alexandrovich; Nefedov, Askold Ivanovich; Parshikov, Viktor Ivanovich; and Khrolenko, Viktor Fedorovich, 3,942,253.

Nelson, Ardell H. Electrical grounding for tank floating cover. 3,942,674, Cl. 220-221.000.

Nelson, Edgar L.; and Espinola, James R., to A. Teichert & Son, Inc. Bicycle stand. 3,942,646, Cl. 211-5.000.

Nelson, Frank L.: *See—*
Werner, Patrick S.; and Nelson, Frank L., 3,942,554.

Nelson, Robert D., to Burroughs Corporation. Digital data communication system featuring multi level asynchronous duplex operation. 3,943,284, Cl. 178-58.00R.

Nelson, Roy A., to LTV Aerospace Corporation. Transportation system. 3,942,449, Cl. 104-107.000.

Neo-Pro Corporation: *See—*
Cornell, Frank M., 3,942,976.

Nessel, Jiri M.: *See—*
Richards, Victor; Nessel, Jiri M.; and Parik, Arno, 3,942,884.

Nettles, Michael L.: *See—*
Brock, George W.; Kollar, Ernest P.; and Nettles, Michael L., 3,943,566.

Neu, Max Gerhard; and Murcott, Arthur William, to Foseco International Limited. Aqueous flux for hot dip galvanising process. 3,943,270, Cl. 427-310.000.

Neuhold, Arnold: *See—*
Mundt, Peter Hans Ernst; Urban, Otfried; and Neuhold, Arnold, 3,943,029.

Neumann, Klaus. Hot strip rolling apparatus. 3,942,697, Cl. 226-46.000.

Neuzil, Richard W.; and Rosback, Donald H., to Universal Oil Products Company. Process for the separation of ethylbenzene by selective adsorption on a zeolitic adsorbent. 3,943,182, Cl. 260-674.0SA.

New Zealand Dairy Board: *See—*
Wassilieff, Alexander; and Shannon, Patrick, 3,942,475.

Newall, Christopher Earle: *See—*
Phillipps, Gordon Hanley; and Newall, Christopher Earle, 3,943,124.

Newkirk, John D., to Nalco Chemical Company. Alkyl polymaine microbiocides. 3,943,255, Cl. 424-329.000.

Newman, Francis L.: *See—*
Padgett, Clarence W.; and Newman, Francis L., 3,943,496.

Newman, Norman; and Fisch, Richard S., to Minnesota Mining and Manufacturing Company. High contrast, rapid access, air stable, regenerable iron chelate developer solutions. 3,942,985, Cl. 96-66.300.

Newman, Ritchey O., Jr.; and McCullough, Thomas W., to Dow Chemical Company, The. Cryogenic tank. 3,942,331, Cl. 62-45.000.

Nick, Howard H.: *See—*
Caragliano, Edward S.; and Nick, Howard H., 3,943,283.

Nicolaus, Frank G.: *See—*
Breitenstein, Charles T.; and Nicolaus, Frank G., 3,942,544.

Niedner, Peter: *See—*
Hultsch, Gunther; Zeppenfeld, Kurt; Niedner, Peter; and Ostermeyer, Peter, 3,943,056.

Nielsen, Aage, to H. Nielsen & Son Maskinfabrik A/S. Heating of aggregate material for asphalt mixing. 3,942,944, Cl. 432-132.000.

Nihon Beru-Haueru Kabushiki Kaisha: *See—*
Saito, Fumio, 3,942,882.

Nikolaus Sorg GmbH & Co.: *See—*
Pieper, Helmut, 3,942,968.

Nilsson, Sten Erling, to Saab-Scania AB. Lighting arrangement for a body compartment in the front portion of a vehicle. 3,943,351, Cl. 240-7.10R.

Nippon Electric Company, Limited: *See—*
Hareyama, Kyuichi, 3,943,431.
Hattori, Masataka; and Toda, Hisao, 3,942,698.
Ono, Yuzo, 3,942,867.
Yamada, Takahiko; and Sakabe, Tadahiko, 3,943,467.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Iyeta, Motoi, 3,943,476.
Izuta, Tadao, 3,942,506.

Nippon Piston Ring Co., Ltd.: *See—*
Sakamaki, Hiroshi, 3,942,920.

Nippon Soken, Inc.: *See—*
Ando, Noriyoshi; and Yamaguchi, Hiroaki, 3,943,345.

Nippon Steel Corporation: *See—*
Nishitani, Teruyuki, 3,942,260.

Nippon Zeon Co., Ltd.: *See—*
Go, Tadahiro; Yaginuma, Hiroshi; and Inoue, Masaaki, 3,942,997.

Nishida, Tadao: *See—*
Matsuyama, Teruko; Nishida, Tadao; and Uraya, Toru, 3,942,636.

Nishino, Makoto: *See—*
Hirata, Isamu; Nishino, Makoto; and Saigo, Kazuhide, 3,942,261

Nishino, Yu: *See—*
Masuda, Noboru; Nishino, Yu; and Takiguchi, Hisashi, 3,943,481

Nishitani, Teruyuki, to Nippon Steel Corporation. Method and apparatus for drying the refractory lining. 3,942,260, Cl. 34-4.000.

Nissan Motor Company Limited: *See—*
Nakazato, Tunoru, 3,942,564.
Shimada, Yukio, 3,942,599.

Nissei Plastics Industrial Co., Ltd.: *See—*
Aoki, Katashi, 3,943,219.

Nittan Kohki Kabushiki Kaisha: *See—*
Kawaguchi, Yasuzi, 3,942,834.

Noe, William B., to Thermo Electron Corporation. Control system for external combustion engine. 3,942,327, Cl. 60-665.000.

Nohara, Akira: *See—*
Murata, Tadakazu; Nohara, Akira; Sugihara, Hirosada; and Sanno, Yasushi, 3,943,169.

Nolan, Thomas Edward, Jr.: *See—*
Hanson, Richard Eric; and Nolan, Thomas Edward, Jr., 3,942,365

Nonaka, Yuji; Kihara, Keiichi; Hironaka, Toshio; and Oda, Yasuhiro, to Toyo Soda Manufacturing Co., Ltd. Process for producing conjugated dienes containing a cyano group. 3,943,161, Cl. 260-465.00K.

Noorily, Peter, to Thomas & Betts Corporation. Adjustable clamp. 3,942,750, Cl. 248-74.0PB.

Norberg, Lars-Gunnar: *See—*
Oberg, Karl-Erik; and Norberg, Lars-Gunnar, 3,942,978.

Nordstrom, Harold A.: *See—*
Bahoshy, Bernard J.; Klose, Robert E.; and Nordstrom, Harold A., 3,943,258.

Nordstrom, Larry A.; and Szechy, Daniel J., to Scope, Incorporated. Printer employing stylus correlation and motor damping means. 3,942,619, Cl. 197-1.00R.

Norman, Robert M.: *See—*
United States of America, National Aeronautics and Space Administration; McDougal, Allan R.; and Norman, Robert M., 3,942,398.

Norris, Alfred W.: *See—*
Baker, Charles; Harkness, Benjamin F.; and Norris, Alfred W., 3,942,445.

Norris, Max E., to SCM Corporation. Preparing fluid shortening for use in yeast raised bakery products. 3,943,259, Cl. 426-24.000.

Northeved, Allan, to Akademiet for de Tekniske Videnskaber, Svejsecentralen. Prostate resectoscope having ultrasonic scanning. 3,942,530, Cl. 128-303.150.

Northrup, Stephen D.: *See—*
Taylor, Maurice J.; Northrup, Stephen D.; and Aspey, Wayne S., 3,943,315.

Norwalk-Turbo, Inc.: *See—*
Pilarczyk, Karol, 3,942,908.

Numbers, Jody L. Lens cap for optical instruments with pivotally mounted lens cover. 3,942,864, Cl. 350-65.000.

O. M. Scott & Sons Company, The: *See—*
Wittenbrook, Lawrence S.; Timmons, Richard J.; and Fleming, Raymond D., 3,942,973.

Oagley, Jack R.: *See—*
Smith, Richard E.; and Oagley, Jack R., 3,942,474.

Oak Industries Inc.: *See—*
Gall, Richard C., 3,943,492.

Oberg, Karl-Erik; and Norberg, Lars-Gunnar, to Uddeholms Aktiebolag. Metallurgical method. 3,942,978, Cl. 75-51.000.

Oberhuber, Alfred: *See—*
Kupka, Detlef; and Oberhuber, Alfred, 3,943,425.

Ochiai, Takeshi. Deceleration detecting device. 3,943,390, Cl. 310-15.000.

Oda, Yasuhiro: *See—*
Nonaka, Yuji; Kihara, Keiichi; Hironaka, Toshio; and Oda, Yasuhiro, 3,943,161.

O'Donnell, James M., to Orgonics, Inc. Process for treating sewage sludge and fertilizer products thereof. 3,942,970, Cl. 71-12.000.

Oertle, Donald H.: *See—*
Radd, Frederick J.; and Oertle, Donald H., 3,942,546.

Ogawa, Takuzo: *See—*
Konishi, Nobutake; Yatsuo, Tsutomu; Kamei, Tatsuya; Okamura, Masahiro; and Ogawa, Takuzo, 3,943,550.
Nagano, Takahiro; Kamei, Tatsuya; and Ogawa, Takuzo, 3,943,547.

Ogle, Robert W., to IMS Limited. Arterial blood sampling device with indicator. 3,942,514, Cl. 128-2.00F.

Oi, Masakazu: *See—*
Momiyama, Takenori; Mizutani, Keiiti; Oi, Masakazu; and Hanatani, Shinji, 3,942,934.

Oi, Tetsu: *See—*
Yamamoto, Naoki; Sato, Kikuji; and Oi, Tetsu, 3,943,570.

Okada, Akira: *See—*
Kobayashi, Toshiyuki; Sunazuka, Kensuke; Mayama, Takeshi; and Okada, Akira, 3,943,238.

Okamoto, Keiichi: *See—*
Matsumoto, Yoshio; and Okamoto, Keiichi, 3,943,359.

Okamura, Akira; and Ando, Shizuo, to Pioneer Electronic Corporation. Automatic telephone answering apparatus. 3,943,291, Cl. 179-6.00E.

Okamura, Masahiro: *See—*
Konishi, Nobutake; Yatsuo, Tsutomu; Kamei, Tatsuya; Okamura, Masahiro; and Ogawa, Takuzo, 3,943,550.

Okaniwa, Tetuo; and Abeta, Sadaharu, to Sumitomo Chemical Company, Ltd. Black dyeing of acid-modified polyester fiber. 3,942,946, Cl. 8-26.000.

Okano, Keisuke: *See—*
Izura, Yoshiteru; and Okano, Keisuke, 3,943,558.

Olds, James O. Floor maintenance machine. 3,942,215, Cl. 15-320.000.

O'Leary, Kevin J.: *See—*
Fenn, Robert W., III; and O'Leary, Kevin J., 3,943,044.

Oliver, Wilfred T., to Ford Motor Company. Internal combustion engine. 3,943,205, Cl. 261-30.000.

Olmstead, John Aaron, to RCA Corporation. Fluid flow measuring system. 3,942,378, Cl. 73-204.000.

Olney, Georges Louis: *See—*
Dakin, Gerald Frank, Jr.; Olney, Georges Louis; and Smyth, Desmond Patrick Robertson, 3,942,689.

Olofsson, Svante Bertil, to Kockums Mekaniska Verkstads Aktiebolag. Back pressure operated sound transmitter. 3,942,468, Cl. 116-142.0FP.

Olowinski, Edward J., to Lord Corporation. Textile spindle mounting. 3,942,314, Cl. 57-135.000.

Olsen, Harry Herbert; and Hjort, Mogens Ivan, to Danalet Kuffertfabrik A/S. Apparatus for producing suitcase frames. 3,943,030, Cl. 156-446.000.

Olson, Robert H.; and Clayton, William J., to Mobil Oil Corporation. Pressure sensitive adhesive closure for bags incorporating an adhesive cuff-lock design. 3,942,713, Cl. 229-62.000.

Olson, Robert K.: *See—*
Hansen, Kenneth B.; and Olson, Robert K., 3,942,757.

Olympus Optical Co., Ltd.: *See—*
Ouchi, Teruo, 3,942,858.

Oman, Price Ward: *See—*
Holmes, Arthur Wilbert, Jr.; Oman, Price Ward; Paddock, Richard Charles; and Price, Donald Walter, 3,943,494.

Omnium de Prospective Industrielle, S.A.: *See—*
Dalle, Jean-Paul, 3,942,948.

O'Neill, John Francis, to Bell Telephone Laboratories Incorporated. Method and apparatus for reducing noise in pam time division networks. 3,943,296, Cl. 179-15.0AN.

Ongaro, Giovanni. Production of tridimensional indicative and/or decorative pieces. 3,942,237, Cl. 29-417.000.

Ono, Yuzo, to Nippon Electric Co., Ltd. Optical memory apparatus. 3,942,867, Cl. 350-96.0GN.

Oosterling, Pieter Adriaan; and Hooftman, Johannes Philippus, to H. Vissers B.V. Device for spreading distributable material comprising a reciprocatorily swinging distributor pipe. 3,942,726, Cl. 239-659.000.

Opal, Edward. Process of sighting an archery bow. 3,942,507, Cl. 124-30.00A.

Opalanko, Richard S.: *See—*
Moreau, Eugene J.; Opalanko, Richard S.; Schapiro, Norman; and Lueders, Robert E., 3,942,974.

Opelt, Christian, to Grundig E.M.V. Elektro-Mechanische. Arrangement for automatic track searching for oblique track recordings. 3,943,562, Cl. 360-10.000.

Opitzer, Rudolf, to Deutsche Babcock & Wilcox Aktiengesellschaft. Shell and tube heat exchanger. 3,942,589, Cl. 165-157.000.

Opti-Holding AG: *See—*
Deneke, Karlheinz; and Paas, Hans, 3,942,635.

Orain, Michel, to Societe Anonyme: Glaenzer Spicer. Constant velocity universal joint. 3,942,335, Cl. 64-21.000.

Orban, Ivan; and Rody, Jean, to CIBA-GEIGY Corporation. Process for the manufacture of triacetone-amine. 3,943,139, Cl. 260-293.890.

Orban, Jean: *See—*
Vital, Zoltan; and Orban, Jean, 3,943,406.

Oregon Graduate Center for Study and Research: *See—*
Miller, Carl T., 3,943,361.

O'Reilly, Dorothy F.; Byrd, James J.; and Finlayson, Allan T., to Sun Ventures, Inc. Apparatus and method for producing ring patterns from electron diffraction spot patterns. 3,943,531, Cl. 354-76.000.

Orgonics, Inc.: *See—*
O'Donnell, James M., 3,942,970.

Oringer, Kenneth: *See—*
Druin, Melvin L.; and Oringer, Kenneth, 3,943,175.

Ormand, Lowell W.: *See—*
Ortwerth, Paul J.; Ormand, Lowell W.; and Wilkinson, David B., 3,942,320.

Orme, Myrl E., to Bendix Corporation, The. Dual-acting relief valve. 3,942,550, Cl. 137-493.000.

Orton, Criley, to United States of America, Navy. Pulse-repetition frequency discriminator (PRFD) for tracking radar signals. 3,943,510, Cl. 343-7.00A.

Ortwerth, Paul J.; Ormand, Lowell W.; and Wilkinson, David B., to United States of America, Air Force. Solid boron fuel burner for ramjet. 3,942,320, Cl. 60-270.00S.

Osagawa, Masaaki; Kobayashi, Kunimitsu; and Nakagawa, Kenji, to Hoya Glass Works, Ltd. Process for producing a gas tight light transmitting optical fiber plate. 3,942,965, Cl. 65-4.00B.

Osaka Gas Kabushiki Kaisha: *See—*
Matsumura, Yuji; and Mitsudomi, Hiroyuki, 3,942,939.

Osborn, Leroy Gordon; and Brownlee, George Hunnam, to Westrex Company Limited. Cinematograph film transport mechanisms. 3,942,883, Cl. 352-166.000.

O'Shea, William J. Votive candle and container and array thereof. 3,942,940, Cl. 431-291.000.

O'Sheeran, John H. Integrated building construction. 3,942,290, Cl. 52-57.000.

Oshima, Shigeru, to Fuji Photo Film Co., Ltd. Simplified camera. 3,943,536, Cl. 354-204.000.

Oster, Clark L., to Square D Company. Current limiting circuit breaker. 3,943,316, Cl. 200-337.000.

Oster, Clark L.; and Khalid, Joseph M., to Square D Company. Current limiting circuit breaker. 3,943,472, Cl. 335-16.000.

Ostermeyer, Peter: *See—*
Hultsch, Gunther; Zeppenfeld, Kurt; Niedner, Peter; and Ostermeyer, Peter, 3,943,056.

Ota, Akira: *See—*
Kawamoto, Takao; Mizuno, Nobuyoshi; and Ota, Akira, 3,943,309.

O'Toole, Jerome M.: *See—*
Cournoyer, Bernard T.; Wright, David M.; and O'Toole, Jerome M., 3,942,639.

Otoshi, Nobumasa: *See—*
Kozuka, Ko; Kurioka, Shunichiro; Yasumoto, Taizo; Kobayashi, Shigeru; Kubota, Atsuo; and Otoshi, Nobumasa, 3,943,223.

Otremba, Klaus, to Siemens Aktiengesellschaft. Frequency converting device for RF signals. 3,943,450, Cl. 325-446.000.

Otsuka, Shin-ichiro: *See—*
Morinaga, Yasushi; Ishizaki, Ayaaki; and Otsuka, Shin-ichiro, 3,943,038.

Ott, Fred L.: *See—*
Smith, Hubert Irvin; and Ott, Fred L., 3,942,594.

Ouchi, Teruo, to Olympus Optical Co., Ltd. Lamp socket. 3,942,858, Cl. 339-75.00R.

Oulu Osakeyhtio: *See—*
Lehtinen, Timo Pellervo, 3,943,118.

Owen, John R., to Eastman Kodak Company. Dye intermediates and their preparation and use in the synthesis of methine dyes. 3,943,142, Cl. 260-298.000.

Owens-Corning Fiberglas Corporation: *See—*
Bell, Reuben H.; and Foley, Kevin M., 3,943,076.
Bell, Reuben H.; Boardway, Russell M., Jr.; Thomson, Francis D.; and Wysocki, Donald C., 3,943,077.
Hullhorst, William B., 3,942,653.

Owens-Illinois, Inc.: *See—*
Baak, Nils Tryggve E. A., 3,942,991.
Ernthausen, Roger E., 3,943,394.

Oy Wartsila Ab: *See—*
Luotolainen, Reijo, 3,942,346.

Oyama, Tomio: *See—*
Kimura, Takeji; Sembokuya, Iwajiro; Hozumi, Hideo; and Oyama, Tomio, 3,943,280.

Paal, Gabor: *See—*
Arnold, Gunther; Paal, Gabor; Wilhelm, Alfred; Halfar, Kurt; and Vollmer, Hans Peter, 3,942,996.

Paas, Hans: *See—*
Deneke, Karlheinz; and Paas, Hans, 3,942,635.

Packard Instrument Company, Inc.: *See—*
Kaartinen, Niilo H., 3,942,938.

Paddock, Richard Charles: *See—*
Holmes, Arthur Wilbert, Jr.; Oman, Price Ward; Paddock, Richard Charles; and Price, Donald Walter, 3,943,494.

Padgett, Clarence W.; and Newman, Francis L., to Rockwell International Corporation. Memory clocking system. 3,943,496, Cl. 340-173.0DR.

Page, Joe W., Jr.; and Stahlhuth, Paul H., to Page, Joe W., Jr. Dental handpiece. 3,942,392, Cl. 74-750.00R.

Pajala, Maija-Liisa: *See—*
Pajala, Vieno Reino; and Pajala, Maija-Liisa, 3,942,902.

Pajala, Vieno Reino; and Pajala, Maija-Liisa. Device for spreading mixtures of primary colors in fluid form. 3,942,902, Cl. 401-45.000.

Paller, Gerald J. Glass bottle mouth insert. 3,942,660, Cl. 215-31.000.

Palmieri, Joseph M., to Esposito, Andrew M.; and Palmieri, Joseph M. Electronic thermostat. 3,942,718, Cl. 236-78.00R.

Pan Nova, Inc.: *See—*
Crowell, Lee Tyler; Greenwood, Robert C.; and Jones, Thomas E., 3,942,543.

Paniszczyn, Thomas F.: *See—*
Carter, Glenn T.; and Paniszczyn, Thomas F., 3,942,746.

Parik, Arno: *See—*
Richards, Victor; Nessel, Jiri M.; and Parik, Arno, 3,942,884.

Parker, Alfred, to Parker Swashplate Limited. Swashplate machines. 3,942,384, Cl. 74-60.000.

Parker Swashplate Limited: *See—*
Parker, Alfred, 3,942,384.

Parker, Walter: *See—*
Waterhouse, George; and Parker, Walter, 3,943,222.

Parkin, William J., to Sanders Associates, Inc. Radiant energy pulse detector. 3,943,360, Cl. 250-210.000.

Parkinson, Dean B.: *See—*
Fishman, Norman; and Parkinson, Dean B., 3,943,188.

Parola, Gary D.: *See—*
Brumm, Richard S.; and Parola, Gary D., 3,942,756.

Parr, Norman Lawrence, to National Research Development Corporation. Temperature compensating ceramic metal bearing systems. 3,942,847, Cl. 308-9.000.

Parrish, Henry Howard: *See—*
Ragsdale, Robert Gordon; and Parrish, Henry Howard, 3,943,285.

Parshikov, Viktor Ivanovich: *See—*
Gebel, Iosif Davydovich; Zykov, Arkady Alexandrovich; Nefedov, Askold Ivanovich; Parshikov, Viktor Ivanovich; and Khrolenko, Viktor Fedorovich, 3,942,253.

Passera, Ludwig, sole heir: *See—*
Passera, Walter, deceased; and Gand, Heinz, 3,942,759.

Passera, Walter, deceased (by Passera, Ludwig, sole heir); and Gand, Heinz, to Robert Bosch GmbH. Magnetically-actuated membrane valve. 3,942,759, Cl. 251-129.000.

Patterson, Frank Knowles, to Du Pont de Nemours, E. I., and Company. Conductor compositions comprising nickel borides. 3,943,168, Cl. 252-519.000.

Patti, Vincent J., to Standex International Corporation. Compression trimmer. 3,943,417, Cl. 317-249.00R.

Paxton, Lee C.: *See—*
Brown, William G.; and Paxton, Lee C., 3,942,381.

Pearson, Raymond H. Odor control ventilator. 3,942,200, Cl. 4-213.000.

Peattie, Richard Challinor, to Solartron Electronic Group Limited, The. Multiple ramp digitisers. 3,943,506, Cl. 340-347.0NT.

Pechiney Ugine Kuhlmann: *See—*
Sailer, Andre Louis; and Frank, Pierre, 3,943,122.

Peck, Truman C., to Alpine Valley Resort, Inc. Ski lift. 3,942,452, Cl. 104-229.000.

Peelman, Harold E., to Texaco Inc. Simultaneous oxygen and silicon neutron activation well log using pulsed neutron source. 3,943,362, Cl. 250-256.000.

Pellegrino, Robert G.: *See—*
Gandi, Robert A.; Martino, Anthony P.; and Pellegrino, Robert G., 3,942,634.

Pena May, Guillermo. Luminous safety device for doors of vehicles. 3,943,352, Cl. 240-7.10R.

Penguin Pools, Inc.: *See—*
Neal, Kathleen T., 3,943,354.

Pennwalt Corporation: *See—*
Popoff, Ivan Christoff; and Haines, Paul Gordon, 3,943,143.

Penzien, Klaus: *See—*
Naarmann, Herbert; and Penzien, Klaus, 3,943,195.

Perez Gomez, Gonzalo: *See—*
Ruiz-Fornells Gonzalez, Ramon; Perez Gomez, Gonzalo; and Vivanco Sanchez, Jesus, 3,942,372.

Performance Packaging, Inc.: *See—*
Warrick, Philip C., 3,942,654.

Perkin-Elmer Corporation, The: *See—*
Atwood, John G., 3,942,952.

Perkins, Robert W. Segmented buoy. 3,942,203, Cl. 9-8.00R.

Perry, Eugene N.: *See—*
Li, Yi-Sheng; Perry, Eugene N.; Jagow, Robert B.; and Wagner, Phillip A., 3,942,524.

Perry, John H., to Mead Corporation, The. Arrangement for sterilizing a stream of gas. 3,942,941, Cl. 432-29.000.

Perry, Richard Prather: *See—*
Urkowitz, Harry; Perry, Richard Prather; and Weinberg, Leonard, 3,943,346.

Perry, Robert J., to Phillips Petroleum Company. Dryer temperature control. 3,942,262, Cl. 34-15.000.

Persson, Gosta: *See—*
Engstrom, Carl Bengt Alfred; Klang, Hans Georg; and Persson, Gosta, 3,942,990.

Pertusio, Rene: *See—*
Bailey, Edward A.; Pertusio, Rene; and Hibbard, George A., 3,942,838.

Pesonen, Tapio, to Valmet Oy. Automatic vehicle-stopping structure. 3,942,603, Cl. 180-92.000.

Peter, Richard; and Angliker, Hans-Joerg, to Ciba-Geigy AG. Succinimido azo dyestuffs. 3,943,120, Cl. 260-152.000.

Peters, Iskra Genrikhovna: *See—*
Aristarkhov, Nikolai Nikolaevich; Efimov, Igor Alexandrovich; Zaitsev, Boris Ivanovich; Peters, Iskra Genrikhovna; Tymosh, Boris Severianovich; Filonov, Viktor Sergeevich; Sharov, Alexei Lavrentievich; Shildin, Alexei Ivanovich; Balashova, Galina Stepanovna; Bets, Nikolai Ivanovich; Skvortsov, Stanislav Alexandrovich; Yakovleva, Valentina Stepanovna; Zhuchkov, Ivan Ilich; Gorjunov, Vladimir Sergeevich; Petrov, Vladimir Alexeevich; Kevrolev, Vladimir Petrovich; Rybakov, Valery Nikolaevich; and Tverdovsky, Ninel Dmitrievich, 3,943,365.

Petro-Tex Chemical Corporation: *See—*
Tschopp, Lloyd D., 3,943,185.

Petrov, Vladimir Alexeevich: *See—*
Aristarkhov, Nikolai Nikolaevich; Efimov, Igor Alexandrovich; Zaitsev, Boris Ivanovich; Peters, Iskra Genrikhovna; Tymosh, Boris Severianovich; Filonov, Viktor Sergeevich; Sharov, Alexei Lavrentievich; Shildin, Alexei Ivanovich; Balashova, Galina Stepanovna; Bets, Nikolai Ivanovich; Skvortsov, Stanislav Alexandrovich; Yakovleva, Valentina Stepanovna; Zhuchkov, Ivan Ilich; Gorjunov, Vladimir Sergeevich; Petrov, Vladimir Alexeevich; Kevrolev, Vladimir Petrovich; Rybakov, Valery Nikolaevich; and Tverdovsky, Ninel Dmitrievich, 3,943,365.

Petry, Robert K.; and Shortway, Harry A., to Congoleum Industries, Inc. Decorative surface coverings. 3,943,018, Cl. 156-79.000.

Peytavin, Pierre, to Societe Anonyme dite: VALLOUREC (Usines a tubes de Lorraine-Escaut et Vallourec Beunies. Turning mechanism for the movement of ladles in steel mills. 3,942,650, Cl. 214-1.0BC.

Pfau, Jean; Rhyner, Heinz; and Balleys, Francois, to Ateliers des Charmilles, S.A. Process and apparatus for electro-erosion machining by electrical discharges employing variable cut-off time intervals between pulse trains and/or pulse trains of variable durations. 3,943,321, Cl. 219-69.00M.

Pfitzner, John. Valves. 3,942,547, Cl. 137-102.000.

Pfizer Inc.: *See—*
Corey, Elias J.; Bindra, Jasjit S.; and Schaaf, Thomas K., 3,943,151.
Longhenry, David K., 3,942,899.

Pfremmer, Donald Wayne. Bale trailer. 3,942,666, Cl. 214-518.000.

Philip Morris Incorporated: *See—*
Church, Armistead S.; Smick, William H., III; and Marsh, Walter W., 3,942,623.

Phillipps, Gordon Hanley; and Newall, Christopher Earle. Chemical compounds. 3,943,124, Cl. 260-239.55R.

Phillips, David C., to Westinghouse Electric Corporation. Noncolloidal polyamic acid electrodeposition compositions. 3,943,065, Cl. 252-500.000.

Phillips, Howard L.; and Moriarty, Maurice J. Cam transmission internal combustion engine. 3,942,488, Cl. 123-55.0AA.

Phillips, James P., to Andrew Corporation. Corrugated microwave horn. 3,943,521, Cl. 343-786.000.

Phillips, John J.; and Clark, Thomas A., to G&H Technology, Inc. Parachute riser buckle. 3,942,227, Cl. 24-230.00A.

Phillips, Michael James: *See—*
Brewster, Arthur Edward; Weir, Donald Adams; Watson, Christopher Alan; George, Roger Geoffrey; and Phillips, Michael James, 3,943,489.

Phillips, Otto, to International Tools (1973) Limited. Sliding cover safety package. 3,942,630, Cl. 206-1.500.

Phillips Petroleum Company: *See—*
Brady, Donnie G.; Deck, Harold R.; Jones, Faber B.; and Underwood, John H., 3,943,164.
Gilbert, Dixie E., 3,942,932.
Perry, Robert J., 3,942,262.
Ripley, Dennis L., 3,943,068.

Pickard, Bernard H., to Bardon Research and Development Limited. Engine preheater. 3,943,325, Cl. 219-208.000.

Pieper, Helmut, to Nikolaus Sorg GmbH & Co. Method and apparatus for melting and subsequently refining glass. 3,942,968, Cl. 65-134.000.

Pierson, William Grant: *See—*
Delaney, Thomas James; and Pierson, William Grant, 3,943,240.

Pies, Wilfried, to Krautkramer-Branson, Incorporated. Method and apparatus for adjusting defect gate in ultrasonic pulse-echo testing. 3,942,358, Cl. 73-67.700.

Pignocco, Arthur J.: *See—*
Kachik, Robert H.; Manganello, Samuel J.; and Pignocco, Arthur J., 3,942,578.

Pilarczyk, Karol, to Norwalk-Turbo, Inc. Gas turbine driven high speed centrifugal compressor unit. 3,942,908, Cl. 415-199.00A.

Pile, Delbert W. Impeller type engine. 3,942,484, Cl. 123-8.410.

Pilgrim Engineering Developments Limited: *See—*
Bunyan, Thomas Walter, 3,942,466.

Pink, John J., to Amana Refrigeration, Inc. Door delay closing mechanism for the ice chute from a power driven ice dispenser in a freezer-refrigerator. 3,942,334, Cl. 62-266.000.

Pioneer Associates: *See—*
Coucher, Robert G., 3,942,730.
Pioneer Electronic Corporation: *See—*
Okamura, Akira; and Ando, Shizuo, 3,943,291.
Pioneer Plastic Containers Limited: *See—*
Robinson, Guy Desborough, 3,942,755.
Pira, Camille Francois; and DeRoeck, Joseph Irma, to AGFA-GEVAERT N.V. Web guiding apparatus. 3,942,696, Cl. 226-21.000.
Piribauer, Herbert, to AKG Akustische u Kino-gerate Gesellschaft m.b.H. Headphone operating on the two-way system. 3,943,304, Cl. 179-105.000.
Pirson, Jacques E.: *See—*
Pirson, Sylvain J.; and Pirson, Jacques E., 3,943,436.
Pirson, Sylvain J.; and Pirson, Jacques E. Line integral method of magneto-electric exploration. 3,943,436, Cl. 324-8.000.
Piszak, Jur: *See—*
Harpula, Jan; Piszak, Jur; Debski, Mieczyslaw; Rzepa, Tadeusz; Sliwa, Jerzy; and Heryan, Andrzej, 3,943,089.
Pitchon, Esra: *See—*
Halik, Joseph John; Pitchon, Esra; Schulman, Marvin; Schwarz, Milton H.; and Yezek, Milton, 3,943,266.
Pitney-Bowes, Inc.: *See—*
Lupkas, Raymond Robert, 3,942,436.
Pittsburgh Corning Corporation: *See—*
Weaver, Harold Lloyd, 3,943,032.
Place, Donald E., to Therm-O-Disc Incorporated. Adjustable thermostat. 3,943,478, Cl. 337-347.000.
Planet Corporation: *See—*
Wentzel, Roger D., 3,942,663.
Plasma Coatings, Inc.: *See—*
Nalband, Thomas E., 3,942,230.
Platz, Winfried; and Heinzelmann, Karl-Georg, to Siemens Aktiengesellschaft. Collimator for a ray diagnosing device. 3,943,366, Cl. 250-505.000.
Pledger, Richard Payne, to United States of America, Air Force. Mirror steering system. 3,942,879, Cl. 350-285.000.
Plegat, Alain Edouard, to Societe Anonyme des Usines Chausson. Machine for the successive welding of two header boxes in the two end plates of radiators. 3,942,703, Cl. 228-41.000.
Plessey Handel und Investments A.G.: *See—*
Jackson, Norman Frank, 3,943,041.
Plessey Incorporated: *See—*
Frazee, Lawrence E.; and Fraioli, Anthony V., 3,943,557.
Plunk, Rowe A. Running tools. 3,942,833, Cl. 294-86.180.
Poehlmann, Paul W. Knife. 3,942,249, Cl. 30-160.000.
Poitevin, Jean-Pierre: *See—*
Dezael, Claude; Poitevin, Jean-Pierre; and Renault, Philippe, 3,943,228.
Polaroid Corporation: *See—*
Wilson, Stewart W., 3,942,268.
Polcer, John: *See—*
Barratt, Robert O.; Polcer, John; and Swift, Richard James, 3,942,482.
Pollock, James Francis; Dunn, Peter Douglas; Rice, Graham; and Power, Basil Dixon, to United Kingdom Atomic Energy Authority. Method and apparatus for electrically heating a fluid. 3,943,330, Cl. 219-381.000.
Polychrome Corporation: *See—*
Bown, Delos Edward; and Graves, James Marriott, 3,943,539.
Polysar Limited: *See—*
Coulthard, Douglas, 3,943,192.
Feniak, George, 3,943,093.
Pommerening, Uwe A.; and Richards, Glenn L., to Stromberg-Carlson Corporation. Electronic private automatic branch exchange. 3,943,297, Cl. 179-18.0GF.
Ponczek, George Mark; and DeBoer, Herman Owen, Jr., to Sunbeam Corporation. Can opener with bag opener attachment. 3,942,247, Cl. 30-6.500.
Ponder & Best, Inc.: *See—*
Betensky, Ellis I., 3,942,875.
Betensky, Ellis I., 3,942,876.
Vital, Zoltan; and Orban, Jean, 3,943,406.
Poon, Sui Yun, to Ransome Hoffmann Pollard Limited. Self-compensating clutch/brake. 3,942,617, Cl. 192-111.00A.
Popoff, Ivan Christoff; and Haines, Paul Gordon, to Pennwalt Corporation. Oxazolidine and thiazolidine derived carbodithioate compositions useful as vulcanization accelerators. 3,943,143, Cl. 260-299.000.
Pormale, Milda Yanovna: *See—*
Kashkina, Nadezhda Alexandrovna; Pormale, Milda Yanovna; Kalnish, Arvid Yanovich; and Surna, Yan Alexandrovich, 3,943,150.
Porret, Daniel, to Ciba-Geigy Corporation. Diglycidylbenzimidiazolones. 3,943,109, Cl. 260-77.50C.
Portec, Inc.: *See—*
Broling, Keith W., 3,942,454.
Porter, David Malcolm: *See—*
Hinley, John James; and Porter, David Malcolm, 3,942,999.
Portner, Robert; and Miller, Phillip, to Magna Mir, Inc. Projection screen unit. 3,942,869, Cl. 350-117.000.
Portz, Wilhelm: *See—*
Cziska, Johann; Strauss, George; Portz, Wilhelm; Komorniczyk, Klaus; and Kandler, Joachim, 3,943,061.
Possis Corporation: *See—*
Walus, Richard L.; and Quarve, Vernon K., 3,942,687.
Potlatch Corporation: *See—*
Collie, Stafford D., 3,942,710.
Potter, Manfred: *See—*
Dickopp, Gerhard; Potter, Manfred; and Brehm, Otto, 3,943,274.
Pottle, Arthur Richard, to AMP Incorporated. Integrated circuit digital pattern detector. 3,943,487, Cl. 340-146.200.
Power, Basil Dixon: *See—*
Pollock, James Francis; Dunn, Peter Douglas; Rice, Graham; and Power, Basil Dixon, 3,943,330.
Powers, Edward J.; and Hassinger, Walter P., to Celanese Corporation. Process for the dyeing of polybenzimidazole fibers with anionic dyestuffs. 3,942,950, Cl. 8-173.000.
Powers, Gilbert L. Combined ventilator and feeder for avian. 3,942,479, Cl. 119-52.00R.
PPG Industries, Inc.: *See—*
Cook, Richard S., 3,942,293.
Simhan, Krishna, 3,942,469.
Wismer, Marco; Schimmel, Karl F.; and Temple, Rodger G., 3,943,080.
Pramberger, Joseph J., to Steinway & Sons. Bushing for piano action. 3,942,403, Cl. 84-251.000.
Pratt, Donald W.: *See—*
Gill, Geoffrey; Pratt, Donald W.; and Green, Bryant W., 3,942,905.
Precision Industries, Inc.: *See—*
Stanton, Stephen, 3,942,699.
Presto Lock Company, Division of Walter Kidde & Company, Inc.: *See—*
Gehrie, Charles S.; and Feinberg, Irving, 3,942,344.
Price, Donald Walter: *See—*
Holmes, Arthur Wilbert, Jr.; Oman, Price Ward; Paddock, Richard Charles; and Price, Donald Walter, 3,943,494.
Prober, Maurice; and Vostovich, Joseph Edward, to General Electric Company. Method of providing durable, slick sliding surfaces on extrusion forming apparatus, and the product thereof. 3,942,937, Cl. 425-461.000.
Process Systems, Inc.: *See—*
Gallatin, Robert A., 3,942,553.
Procter & Gamble Company, The: *See—*
Roggenkamp, Charles L., 3,943,234.
Young, Herbert Thomas, 3,943,155.
Produits Chimiques Ugine Kuhlmann: *See—*
Schirmann, Jean-Pierre; Mathais, Henri; Tellier, Pierre; and Weiss, Francis, 3,943,132.
Tellier, Pierre; Schirmann, Jean-Pierre; Mathais, Henri; and Weiss, Francis, 3,943,152.
Prokai, Bela; and Kanner, Bernard, to Union Carbide Corporation. Cyano-ether polyalkylsiloxane hydrides. 3,943,156, Cl. 260-448.20N.
Proksa, Ferdinand: *See—*
Schmitzer, Willi; Raffel, Reiner; Althausen, Ferdinand; and Proksa, Ferdinand, 3,942,925.
ProMed Laboratories Inc.: *See—*
Koehn, Wilbur R., 3,943,225.
Protodiakonov, Igor Orestovich: *See—*
Atoiants, Vladimir Sergeevich; Protodiakonov, Igor Orestovich; and Romankov, Petr Grigorievich, 3,942,951.
Pryor, Harry H.; and Schinker, James J., to UMC Industries, Inc. Post-mix vendor syrup tank. 3,942,688, Cl. 222-108.000.
Psenka, Joseph A. Table tennis game. 3,942,795, Cl. 273-30.000.
Pudsey, David Graham, to Elliott Brothers (London) Limited. Navigation aiding systems with one-way ranging and two-way synchronization. 3,943,509, Cl. 343-6.50R.
Puech, Claude: *See—*
d'Auria, Luigi; Chevalier, Guy; Favreau, Michel; Huignard, Jean Pierre; Lacotte, Jean Pierre; and Puech, Claude, 3,943,559.
Pugh, Bradley L., to Akwell Industries, Inc. Dental glove. 3,942,193, Cl. 2-167.000.
Pyrotector, Incorporated: *See—*
Dunphy, Matthew J., 3,943,499.
Quadracast Systems, Inc.: *See—*
Dorren, Louis, 3,943,294.
Quaker Oats Company, The: *See—*
Balaz, Alexander, 3,942,921.
Quality Research Engineering Corporation: *See—*
Fadiga, Dario J.; and Soderman, Reynaldo C. T., 3,942,778.
Quang, Pham Kim, to La Cellophane. Corona charging device. 3,943,418, Cl. 317-262.00A.
Quarve, Vernon K.: *See—*
Walus, Richard L.; and Quarve, Vernon K., 3,942,687.
Quick, Donald Jonathon, to Massey-Ferguson Services N.V. Billet elevator for sugar cane harvesters. 3,942,307, Cl. 56-13.900.
Quidort, Vaughn L., to Westinghouse Electric Corporation. Power and modulation control system. 3,943,446, Cl. 325-144.000.
Quiring, Bernd; and Wagner, Kuno, to Bayer Aktiengesellschaft. Process for the production of telomers containing isocyanate groups. 3,943,159, Cl. 260-453.00P.
R. Alkan & Cie: *See—*
Bourrie, Georges E.; and Lensel, Robert M., 3,942,828.
Hasquenoph, Jean Henri; and Coutin, Pierre Fernand, 3,942,749.
Raab, Andrew F.; and Cobb, Jesse M., to Indak Manufacturing Corporation. Electrical switch and fluid control device. 3,942,555, Cl. 137-625.200.
Radd, Frederick J.; and Oertle, Donald H., to Continental Oil Company. Corrosion monitoring and composition-analytical apparatus. 3,942,546, Cl. 137-93.000.

Raffel, Reiner: *See—*
Schmitzer, Willi; Raffel, Reiner; Althausen, Ferdinand; and Proksa, Ferdinand, 3,942,925.
Ragsdale, Gary W.: *See—*
Vestergaard, Jorgen H.; and Ragsdale, Gary W., 3,943,101.
Ragsdale, Robert Gordon; and Parrish, Henry Howard, to Milgo Electronic Corporation. Multiplexed data modem. 3,943,285, Cl. 178-67.000.
Raiff, Siegfried; and Lenz, Werner, to BASF Aktiengesellschaft. Apparatus for drying photosensitive sheets for the production of printing plates. 3,942,259, Cl. 34-1.000.
Ramos, Dennis. Ribbon dispenser. 3,942,736, Cl. 242-96.000.
Ramsey, Stevens David, Jr., to Stanford Research Institute. Surface deformation gauging system by moire interferometry. 3,943,278, Cl. 178-6.800.
Rand, Alan E. Portable telescope. 3,942,865, Cl. 350-83.000.
Randol, Neil J., to Randol, Neil J. Method of remineralizing and immunizing tooth enamel for the prevention and control of tooth decay and dental caries. 3,943,267, Cl. 427-2.000.
Randolph, Allan E., Sr., to Dayton Progress Corporation. Die unit with quick change features. 3,942,354, Cl. 72-448.000.
Randolph, Thomas C.: *See—*
Hair, Jakie A.; and Randolph, Thomas C., 3,942,480.
Ransome Hoffmann Pollard Limited: *See—*
Poon, Sui Yun, 3,942,617.
Rasch, Hans-Joachim: *See—*
Rathnow, Erich; and Rasch, Hans-Joachim, 3,942,388.
Ratelle, Clement; and Rouillard, Pierre, to Ratelle, Clement. Log cleaning and barking. 3,942,565, Cl. 144-311.000.
Rath, Walter; and Worschech, Rudolf, to Krautkramer-Branson, Incorporated. Arrangement for testing thick-walled specimens by the ultrasonic pulse-echo method. 3,942,361, Cl. 73-67.700.
Rathnow, Erich; and Rasch, Hans-Joachim, to Klockner-Humboldt-Deutz Aktiengesellschaft. Device for the continuous taking of test specimens from pulps or sludges. 3,942,388, Cl. 73-421.00A.
Ratte, Jacques; and Bigras, Jean, to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defense. Method for binding solid propellant to rocket motor case. 3,943,208, Cl. 264-3.00R.
Raymond, Douglas W., to Zehntel, Inc. Capacitor test apparatus and method. 3,943,439, Cl. 324-60.00C.
Raymond Lee Organization, Inc., The: *See—*
Sample, Louis J., 3,943,524.
Tocci, Florindo, 3,942,693.
Raytheon Company: *See—*
Bowen, Robert F., 3,943,320.
Fassett, Matthew, 3,943,523.
Razorenov, Vladimir Alexandrovich: *See—*
Khaidurov, Efim Leontievich; and Razorenov, Vladimir Alexandrovich, 3,942,256.
RCA Corporation: *See—*
Ben-Dov, Oded, 3,943,522.
Castleberry, John, Jr.; Cecelski, Edward Peter; and Storz, Ralph Helmut, 3,943,491.
Dempsey, Donald Joseph, 3,943,512.
Hanson, Richard Eric; and Nolan, Thomas Edward, Jr., 3,942,365.
Hartmann, John Charles, 3,943,527.
Jebens, Robert Warren; and Morewood, William Henry, 3,943,275.
Johnston, Loren Bainum, Jr., 3,943,302.
Kawamoto, Hirohisa; and Allen, Elmer Lawrence, Jr., 3,943,469.
Martinson, Lloyd William, 3,943,347.
McGuffin, William George, 3,943,379.
Morgan, David Keith; and Heuner, Robert Charles, 3,943,380.
Mueller, Charles William; and Douglas, Edward Curtis, 3,943,555.
Olmstead, John Aaron, 3,942,378.
Skorup, Gordon Edward, 3,943,551.
Urkowitz, Harry; Perry, Richard Prather; and Weinberg, Leonard, 3,943,346.
Reactor Centrum Nederland: *See—*
Wijnant, Petrus Leo Clemens; and Ijlstra, Hendrik Jan, 3,942,803.
Reed, Fredric L.; and Young, Edgar D., to Young, Edgar D. Telephone incorporating binary coded decimal time display. 3,943,288, Cl. 179-2.0TC.
Reed, Terry J.: *See—*
Smith, Jack R.; and Reed, Terry J., 3,943,372.
Reeve, John R., Jr.; Busse, Ralph; Walker, Elbert; Welch, Raymond L.; Moore, Hermus C., Jr.; and Jones, Milton P., to Cabot Corporation. Drill rig apparatus. 3,942,593, Cl. 173-23.000.
Reffye, Jerome Verchere de: *See—*
Abel, Patrice; Duverne, Pierre; Elziere, Jean-Bernard; and Reffye, Jerome Verchere de, 3,943,349.
Regan, Bernard M., to Baxter Laboratories, Inc. Antipsychotic agents. 3,943,256, Cl. 424-342.000.
Regan, Robert James: *See—*
Haugsjaa, Paul Osborne; Regan, Robert James; and McNeill, William Henry, 3,943,401.
Haugsjaa, Paul Osborne; McNeill, William Henry; Regan, Robert James; and Lech, Joseph Martin, 3,943,402.
Haugsjaa, Paul Osborne; Regan, Robert James; McNeill, William Henry; and Lech, Joseph Martin, 3,943,403.
McNeill, William Henry; Haugsjaa, Paul Osborne; Regan, Robert James; and Lech, Joseph Martin, 3,943,404.
Reggia, Frank: *See—*
Apstein, Maurice; Reggia, Frank; and Jones, Howard S., Jr., 3,943,520.
Regnier, Marc Andre: *See—*
Colardelle, Joel Serge; Comte, Marie-Helene; and Regnier, Marc Andre, 3,943,432.
Reich, Siegfried: *See—*
Wenzel, Reinhard; and Reich, Siegfried, 3,942,434.
Reiff, Helmut: *See—*
Schroer, Walter; Reiff, Helmut; Dieterich, Dieter; and Berger, Karl, 3,943,252.
Reimschussel, George Paul: *See—*
Barnett, Irvin; and Reimschussel, George Paul, 3,943,220.
Reliance Electric Company: *See—*
Doyle, Lester W.; and Veldman, Bernard T., Sr., 3,942,849.
Eddy, Robert T., 3,942,414.
Renault, Philippe: *See—*
Dezael, Claude; Poitevin, Jean-Pierre; and Renault, Philippe, 3,943,228.
Renzi, Anthony J.: *See—*
Andress, Otto G.; Fischetti, Joseph W.; Renzi, Anthony J.; and Ryan, Francis D., 3,942,804.
Repta, Arnold J.: *See—*
Higuchi, Takeru; Repta, Arnold J.; and Bourne, David W. A., 3,943,137.
Rescue Products, Inc.: *See—*
Klippel, Allen Pummill, 3,942,521.
Restaurant Technology, Inc.: *See—*
Binks, Chester J.; and Kroll, Steve, 3,942,426.
Reudink, Douglas Otto John: *See—*
Cox, Donald Clyde; and Reudink, Douglas Otto John, 3,943,468.
Reutter, Siegfried: *See—*
Stotz, Wolf Gunter; and Reutter, Siegfried, 3,943,035.
Reymond, Jean-Claude; d'Auria, Luigi; and Chevalier, Guy, to Thomson-CSF. Terminal and repeater stations for telecommunication system using optical fibers. 3,943,358, Cl. 250-199.000.
Reymond, Marc. Winch for sailing ships. 3,942,762, Cl. 254-150.00R.
Rhee, Seong K.: *See—*
Smith, Gerald C.; Ellingson, Dennis L.; Johnson, Colin A.; and Rhee, Seong K., 3,943,323.
Rhone-Poulenc Industries: *See—*
Mourier, Marcel, 3,943,437.
Rhone-Poulenc, S.A.: *See—*
Jamet, Bruno; and Roget, Jean, 3,943,057.
Rhone-Poulenc Textile: *See—*
Bakassian, Georges; Gay, Michel; and Lefort, Marcel, 3,943,099.
Bost, Pierre-Etienne; Costantini, Michel; Jouffret, Michel; and Lartigau, Guy, 3,943,179.
Rhyner, Heinz: *See—*
Pfau, Jean; Rhyner, Heinz; and Balleys, Francois, 3,943,321.
Ribaldone, Giuseppe, to Montedison S.p.A.,. Process for preparing 3,3-thiobis (2-methoxy-1-azabenzanthrone. 3,943,136, Cl. 260-272.000.
Rice, Graham: *See—*
Pollock, James Francis; Dunn, Peter Douglas; Rice, Graham; and Power, Basil Dixon, 3,943,330.
Rice, Max. Exercising device. 3,942,790, Cl. 272-79.00R.
Richards, Glenn L.: *See—*
Pommerening, Uwe A.; and Richards, Glenn L., 3,943,297.
Richards, Peter Henry: *See—*
Jack, Harry Ross Scarlet; and Richards, Peter Henry, 3,942,967.
Richards, Victor; Nessel, Jiri M.; and Parik, Arno, to Richards, Victor. Interactive audio-visual apparatus. 3,942,884, Cl. 353-9.000.
Richardson, Ernest T. Flange protector. 3,942,681, Cl. 220-324.000.
Richardson, William R., to Valley National Bank. Sandbox horse training apparatus. 3,942,477, Cl. 119-29.000.
Richilano, Vincent J., to Zephyr Industries, Inc. Cast aluminum alloy hammer. 3,942,567, Cl. 145-29.00R.
Richmond Marine Limited: *See—*
Ingham, Michael J., 3,942,462.
Richter, Hans K.; and Ludeling, Dietrich K. Method and pharmaceutical preparations for treating and preventing physiological disturbances in vertebrates, caused by molds and yeasts. 3,943,250, Cl. 424-249.000.
Richter, Sidney B.; and Krenzer, John, to Velsicol Chemical Corporation. Dioxolane substituted α-haloanilides as herbicides. 3,942,972, Cl. 71-88.000.
Richter, Sven U. K. A.; Tsolis, Alexandros K.; and Tsolis, Elefteria A., to Sanitized Incorporated. Acylamides of beta-cyano-ethenesulfonyl substituted aminoarenes. 3,943,154, Cl. 260-397.600.
Rickard, James E. Window guard. 3,942,576, Cl. 160-104.000.
Ricoh Co., Ltd.: *See—*
Hirafuji, Van, 3,943,541.
Jinsenji, Sei, 3,942,743.
Yanagawa, Nobuyuki, 3,942,642.
Riddle, Neville L.: *See—*
Mandusky, Jack C.; and Riddle, Neville L., 3,942,777.
Ridgway, Anthony Douglas; Smith, John Hugh; and Stainforth, Peter Terrick, to Imperial Chemical Industries Limited. Quantising machines. 3,942,562, Cl. 141-83.000.
Rieter Machine Works, Ltd.: *See—*
Lattion, Andre, 3,942,731.
Ringwall, Carl Gustave: *See—*
Honda, Thomas Shaw; and Ringwall, Carl Gustave, 3,942,558.
Ripley, Dennis L., to Phillips Petroleum Company. Nickel-phosphorus oxidative dehydrogenation catalyst. 3,943,068, Cl. 252-437.000.
Riseley, Eric Ivan: *See—*
Marshall, Geoffrey; and Riseley, Eric Ivan, 3,943,138.

Riseman, Jacob: *See—*
Ho, Irving T.; and Riseman, Jacob, 3,943,542.
Ristow, Ulrich: *See—*
Siegert, Heiner; and Ristow, Ulrich, 3,943,037.
Ritzerfeld, Gerhard. Method of making a printing form. 3,942,440, Cl. 101-401.100.
Rizzolo, Silvio J., to Engelhard Minerals & Chemicals Corporation. Thermocouple structure and method of manufacturing same. 3,942,242, Cl. 29-573.000.
Roach, Daniel F.; and Spector, George. Rule protractor. 3,942,252, Cl. 33-75.00R.
Robert Bosch GmbH: *See—*
Beckers, Hans; and Bonus, Horst, 3,942,676.
Eheim, Franz; and Fehlmann, Wolfgang, 3,942,498.
Eisele, Hermann; and Stumpp, Gerhard, 3,942,496.
Hofer, Gerald; and Konrath, Karl, 3,942,914.
Hofmann, Karl, 3,942,366.
Linder, Ernst; and Schuster, Gregor, 3,942,493.
Passera, Walter, deceased; and Gand, Heinz, 3,942,759.
Schwartz, Reinhard, 3,942,497.
Wirth, Hermann; and Muller, Lothar, 3,942,721.
Roberts, Leonard H.: *See—*
Sato, Kunito; and Roberts, Leonard H., 3,943,263.
Robinson, Brian, to Catnic Components Limited. Lintel for double-skin wall. 3,942,292, Cl. 52-204.000.
Robinson, Guy Desborough, to Pioneer Plastic Containers Limited. Moulds for use on injection moulding machines. 3,942,755, Cl. 249-162.000.
Robison, Russell O.: *See—*
Griffies, David R.; Robison, Russell O.; and Taylor, Robert W., 3,942,251.
Robison, William O. Specimen container. 3,942,717, Cl. 233-26.000.
Roch, Gerald V., to Hurco Manufacturing Company Inc. Shear mounting for corner shearing machine. 3,942,400, Cl. 83-13.000.
Roche, John L., to Minnesota Mining and Manufacturing Co. Audio-visual system including audio-visual slides. 3,942,269, Cl. 35-9.00A.
Rockwell International Corporation: *See—*
Griffies, David R.; Robison, Russell O.; and Taylor, Robert W., 3,942,251.
Hermach, Carl J., 3,942,782.
Padgett, Clarence W.; and Newman, Francis L., 3,943,496.
Vetrano, James B., 3,943,210.
Rodermund, Gerd; and Kappus, Helmut, to Rodermund, Gerd. Machine for manufacturing garlands. 3,942,310, Cl. 57-24.000.
Rody, Jean, to Ciba-Geigy Corporation. 1-Aza-4-thiacyclohexane-4,4-dioxide derivatives and their use as agents protecting against light rays. 3,943,098, Cl. 260-45.8SN.
Rody, Jean: *See—*
Orban, Ivan; and Rody, Jean, 3,943,139.
Roger, Gauvain, to Societe Alsacienne de Constructions Mecaniques de Mulhouse. Staple draft devices. 3,942,223, Cl. 19-258.000.
Rogers, Austin S., to Homco International, Inc. Well tool apparatus and method. 3,942,373, Cl. 73-151.000.
Rogers, Howard D., to Singer Company, The. Carriage for hand knitting machines having integral Jacquard cam pattern changing means. 3,942,339, Cl. 66-75.00R.
Roget, Jean: *See—*
Jamet, Bruno; and Roget, Jean, 3,943,057.
Roggenkamp, Charles L., to Procter & Gamble Company, The. Acidic emollient liquid detergent composition. 3,943,234, Cl. 424-343.000.
Roggenstein, Edwin O.; Andrews, Donald Allen; and Manthiram, Chockalingam, to Burroughs Corporation. Method of and apparatus for measuring and setting the tension of stressed members. 3,942,369, Cl. 73-143.000.
Rohm and Haas Company: *See—*
Keener, Ronald L.; and Kittle, Paul A., 3,943,229.
Rohrman, David L. Restraining device for a driver's leg in a vehicle. 3,942,818, Cl. 280-150.00R.
Rolf, Eckard: *See—*
Dinglinger, Wolfgang; and Rolf, Eckard, 3,942,456.
Roman, Paul, to Thomson-CSF Visualisation et Traitement des Informations (T-VT). Fiber-optical structure of high apparent power of resolution. 3,942,866, Cl. 350-96.00B.
Romanenko, Vitaly Ivanovich: *See—*
Korenkov, Vladimir Nikolaevich; Romanenko, Vitaly Ivanovich; Kuznetsov, Sergei Ivanovich; and Voronov, Jury Viktorovich, 3,943,055.
Romankov, Petr Grigorievich: *See—*
Atoiants, Vladimir Sergeevich; Protodiakonov, Igor Orestovich; and Romankov, Petr Grigorievich, 3,942,951.
Romano, Carlo: *See—*
Bettini, Giuseppe; and Romano, Carlo, 3,943,569.
Roncato, Giordano, to Saint-Gobain Industries. Method for cutting fibers. 3,942,401, Cl. 83-19.000.
Roos, Ernst: *See—*
Wagner, Klaus; Eue, Ludwig; Schmidt, Robert R.; and Roos, Ernst, 3,943,180.
Rosback, Donald H., to Universal Oil Products Company. Aromatic hydrocarbon isomer separation process by adsorption. 3,943,183, Cl. 260-674.0SA.
Rosback, Donald H., to Universal Oil Products Company. Aromatic hydrocarbon isomer separation process. 3,943,184, Cl. 260-674.0SA.
Rosback, Donald H.: *See—*
Neuzil, Richard W.; and Rosback, Donald H., 3,943,182.
Roth, Oscar, to Involvo AG. Glueing device. 3,942,686, Cl. 222-146.0HE.
Rother, Franz. Process for manufacturing bodies of various shapes from inorganic powders. 3,943,217, Cl. 264-61.000.
Rouillard, Pierre: *See—*
Ratelle, Clement; and Rouillard, Pierre, 3,942,565.
Roux-Guerraz, Claude: *See—*
Chan, Trinh Dinh; Martino, Germain; Sajus, Lucien; and Roux-Guerraz, Claude, 3,943,067.
Roxer SA: *See—*
Chevrolet, Gerard, 3,942,202.
Royel International Pty. Ltd.: *See—*
Henry, Colin John McKenzie, 3,943,326.
Rudolph, Hans: *See—*
Margotte, Dieter; Lachmann, Burkhard; Vernaleken, Hugo; Rudolph, Hans; and Cohnen, Wolfgang, 3,943,094.
Rudtke, Helen T., to American Hospital Supply Corporation. Reinforced double-fenestrated surgical drape. 3,942,523, Cl. 128-132.00D.
Ruger, William B.; and Larson, Lawrence L., to Sturm, Ruger & Co. Inc. Removable filler strips for double barrel firearms. 3,942,279, Cl. 42-76.00R.
Ruhrchemie Aktiengesellschaft: *See—*
Dany, Franz-Josef; Wortmann, Joachim; Munch, Peter; and Braun, Gunther, 3,943,194.
Ruiz-Fornells Gonzalez, Ramon; Perez Gomez, Gonzalo; and Vivanco Sanchez, Jesus, to Astilleros Espanoles, W.A. Procedure for making tests of propeller cavitation. 3,942,372, Cl. 73-148.000.
Rupilius, Wolfgang: *See—*
Stein, Werner; Rupilius, Wolfgang; and Krings, Peter, 3,943,178.
Rushton, Mary P. Hand puppet. 3,942,283, Cl. 46-154.000.
Russell Corporation: *See—*
Adamson, Fletcher D., 3,942,732.
Russell, George F. Laminating travelling press. 3,943,025, Cl. 156-380.000.
Russell, Lewis K.; Dao, Tich T.; and Muller, Richard S., to Signetics Corporation. Threshold switching integrated circuit and method for forming the same. 3,943,554, Cl. 357-34.000.
Rutty, Edward Charles, to Stanley Works, The. Coilable rule. 3,942,738, Cl. 242-107.200.
Ryan, Charles W.; and Blanchard, William B., to Eli Lilly and Company. Process for acylating a 7-aminocephalosporin. 3,943,126, Cl. 260-243.00C.
Ryan, Francis D.: *See—*
Andress, Otto G.; Fischetti, Joseph W.; Renzi, Anthony J.; and Ryan, Francis D., 3,942,804.
Ryan, Paul A. Digital tuning device. 3,943,471, Cl. 334-59.000.
Rybakov, Valery Nikolaevich: *See—*
Aristarkhov, Nikolai Nikolaevich; Efimov, Igor Alexandrovich; Zaitsev, Boris Ivanovich; Peters, Iskra Genrikhovna; Tymosh, Boris Severianovich; Filonov, Viktor Sergeevich; Sharov, Alexei Lavrentievich; Shildin, Alexei Ivanovich; Balashova, Galina Stepanovna; Bets, Nikolai Ivanovich; Skvortsov, Stanislav Alexandrovich; Yakovleva, Valentina Stepanovna; Zhuchkov, Ivan Ilich; Gorjunov, Vladimir Sergeevich; Petrov, Vladimir Alexeevich; Kevrolev, Vladimir Petrovich; Rybakov, Valery Nikolaevich; and Tverdovsky, Ninel Dmitrievich, 3,943,365.
Ryder, Francis E.; and Thomas, Michael D., to Ryder International Corporation. Fish lure. 3,942,280, Cl. 43-42.140.
Ryder International Corporation: *See—*
Ryder, Francis E.; and Thomas, Michael D., 3,942,280.
Rzepa, Tadeusz: *See—*
Harpula, Jan; Piszak, Jur; Debski, Mieczyslaw; Rzepa, Tadeusz; Sliwa, Jerzy; and Heryan, Andrzej, 3,943,089.
S.R.C. Laboratories, Inc.: *See—*
Mocarski, Zenon R., 3,942,724.
S.S.S. Patents Limited: *See—*
Clements, Herbert Arthur, 3,943,374.
Saab-Scania AB: *See—*
Nilsson, Sten Erling, 3,943,351.
Saari, Albert L.: *See—*
Anderson, Ray H.; and Saari, Albert L., 3,943,241.
Sable, Donald E. Well tool protector. 3,942,824, Cl. 285-45.000.
Sachs, Carrol C. Pneumatic means for production of molded structures. 3,942,753, Cl. 249-65.000.
Saeva, Franklin D., to Xerox Corporation. Liquid crystalline optical filter. 3,942,870, Cl. 350-150.000.
Saeva, Franklin D., to Xerox Corporation. Liquid crystalline optical filter. 3,942,871, Cl. 350-150.000.
Saeva, Franklin D., to Xerox Corporation. Liquid crystalline display. 3,942,872, Cl. 350-160.0LC.
Saeva, Franklin D., to Xerox Corporation. Liquid crystalline information transfer. 3,943,369, Cl. 250-568.000.
Saft-Societe des Accumulateurs Fixes et de Traction: *See—*
Lebrun, Roger, 3,943,007.
Saigo, Kazuhide: *See—*
Hirata, Isamu; Nishino, Makoto; and Saigo, Kazuhide, 3,942,261.
Sailer, Andre Louis; and Frank, Pierre, to Pechiney Ugine Kuhlmann. Polyazo compounds containing benzhydrol as a component. 3,943,122, Cl. 260-169.000.
Saint-Gobain Industries: *See—*
Roncato, Giordano, 3,942,401.
Saito, Fumio, to Bell & Howell Japan, Ltd.; and Nihon Beru-Haueru Kabushiki Kaisha. Film transport speed controlling device. 3,942,882, Cl. 352-14.000.

Saito, Gosaku: *See—*
Komatsu, Nobuhiko; Sakai, Sumio; Saito, Gosaku; Kikumoto, Syoichi; and Kimura, Keitaro, 3,943,247.

Saito, Katshuhiko: *See—*
Hirata, Yasuhiro; Kobayashi, Shoichi; Yamaguchi, Nobuo; Saito, Katshuhiko; Kimura, Mamoru; Iwasa, Yoshitel; Ueda, Masatoshi; and Magara, Hideki, 3,942,291.

Saito, Nobuo: *See—*
Yoshizawa, Shigeru; Saito, Nobuo; Mikami, Itsuo; and Kamoshita, Gen-ichi, 3,943,497.

Sajus, Lucien: *See—*
Chan, Trinh Dinh; Martino, Germain; Sajus, Lucien; and Roux-Guerraz, Claude, 3,943,067.

Sakabe, Tadahiko: *See—*
Yamada, Takahiko; and Sakabe, Tadahiko, 3,943,467.

Sakai, Sumio: *See—*
Komatsu, Nobuhiko; Sakai, Sumio; Saito, Gosaku; Kikumoto, Syoichi; and Kimura, Keitaro, 3,943,247.

Sakamaki, Hiroshi, to Nippon Piston Ring Co., Ltd. Rotary fluid pumps. 3,942,920, Cl. 418-230.000.

Sakurai, Yasusada: *See—*
Murata, Hikaru; Umeda, Yasuji; Sakurai, Yasusada; and Doi, Yasuo, 3,942,548.

Saladini, Joseph J.: *See—*
Steensen, Wayne L.; and Saladini, Joseph J., 3,943,265.

Sally, Theodore J.: *See—*
Morris, Earl L.; and Sally, Theodore J., 3,942,201.

Salomon, George Pierre Joseph, to Etablissements Francois Salomon et Fils. Safety binding. 3,942,811, Cl. 280-11.35T.

Salomon, Georges Pierre Joseph, to S.A. Etablissements Francois Salomon & Fils. Safety fixing device for skis. 3,942,810, Cl. 280-11.35K.

Sample, Louis J., to Raymond Lee Organization, Inc., The, a part interest. TV antenna support. 3,943,524, Cl. 343-888.000.

Sandell, Thorsten W.: *See—*
Markoo, Eric L.; Strand, Tore G. H.; and Sandell, Thorsten W., 3,942,959.

Sanders Associates, Inc.: *See—*
Parkin, William J., 3,943,360.

Sandoz, Inc.: *See—*
Anderson, Paul L.; and Brittain, Darryl A., 3,943,257.
Houlihan, William J., 3,943,147.

Sandoz Ltd.: *See—*
Sturmer, Egon, 3,943,246.

Sang, Henry W., to General Electric Company. Additive dispensing system. 3,942,341, Cl. 68-17.00R.

Sanitary Scale Company: *See—*
Karp, Edward C., 3,942,597.

Sanitized Incorporated: *See—*
Richter, Sven U. K. A.; Tsolis, Alexandros K.; and Tsolis, Elefteria A., 3,943,154.

Sanken Electric Company Limited: *See—*
Yoshizawa, Yutaka, 3,943,014.

Sankyo Company Limited: *See—*
Kajiyama, Shigeo; Kobayashi, Takamitsu; and Yoshizue, Keiro, 3,943,134.

Sanno, Yasushi: *See—*
Murata, Tadakazu; Nohara, Akira; Sugihara, Hirosada; and Sanno, Yasushi, 3,943,169.

Sanraku-Ocean Co., Ltd.: *See—*
Fujii, Kouki, 3,943,135.

Sanwa Seiki Kabushiki Kaisha: *See—*
Kurosaki, Kiichiro, 3,942,250.

Saracsan, Jeffrey W., to Goodyear Tire & Rubber Company, The. Polyurethane composition and method of preparation. 3,942,672, Cl. 220-64.000.

Sargent Industries, Inc.: *See—*
Smith, Fred T., 3,942,601.

Sasahara, Takashi, to Japan Magnetic Lock Co., Ltd. Key operated magnetic tumbler lock. 3,942,345, Cl. 70-276.000.

Sasser, Glen T. Combination air induced and heat circulating log grate. 3,942,509, Cl. 126-121.000.

Sato, Kikuji: *See—*
Yamamoto, Naoki; Sato, Kikuji; and Oi, Tetsu, 3,943,570.

Sato, Kunito; and Roberts, Leonard H., to Armour and Company. Preparation of soy-extended frankfurters and other cured meat products having improved color. 3,943,263, Cl. 426-250.000.

Sato, Masamichi, to Fuji Photo Film Co., Ltd. Method for forming micropatterns utilizing a transparent raised image as photomask. 3,942,981, Cl. 96-36.000.

Sato, Masamichi, to Xerox Corporation. Liquid development process and apparatus for electrostatography. 3,943,268, Cl. 427-17.000.

Sato, Toru, to Bridgestone Liquefied Gas Company, Ltd. Method of constructing low temperature liquefied gas tanker ships. 3,942,459, Cl. 114-74.00R.

Satomi, Takeo; Mukai, Kunio; Mine, Akihiko; Hino, Naganori; and Tateishi, Kohshi, to Sumitomo Chemical Company, Limited. Phosphorothionoamidates. 3,943,203, Cl. 260-954.000.

Saunders, Brian Arthur: *See—*
Barnett, Barry Roger Michael; Alley, Gerald Francis; and Saunders, Brian Arthur, 3,942,226.

Savage, Philip M., Jr. Fire extinguisher support and enclosure structure. 3,942,669, Cl. 220-18.000.

Savell, Jesse J., Jr. Building construction having panels formed of contacting layers with cast-in-situ material at the panel junctures. 3,942,294, Cl. 52-259.000.

Savoca, Robert C.: *See—*
Spielberger, Seymour C.; and Savoca, Robert C., 3,942,891.

Sawamura, Fujio: *See—*
Shibata, Morio; Sawamura, Fujio; and Funatsu, Kunio, 3,943,421.

Sawyer, Thomas F., to General Electric Company. Method and apparatus for casting directionally solidified articles. 3,942,581, Cl. 164-60.000.

Sawyer, Webster M., Jr.: *See—*
Farmer, Robert, III; Lawson, Jimmie B.; and Sawyer, Webster M., Jr., 3,943,160.

Sayles, David C., to United States of America, Army. Water-free solid propellant exhaust gases. 3,942,319, Cl. 60-253.000.

SCA Projekt Aktiebolag: *See—*
Fredriksson, Borje Ingemar, 3,942,729.

Schaaf, Thomas K.: *See—*
Corey, Elias J.; Bindra, Jasjit S.; and Schaaf, Thomas K., 3,943,151.

Schacht, Peter. Baseboard assembly. 3,942,295, Cl. 52-288.000.

Schad, Jerome G. Wheel balancing devices. 3,942,383, Cl. 73-483.000.

Schaeffer, Robert L.; and Toft, Kaj, to General Electric Company. Steam iron soleplate construction. 3,942,706, Cl. 228-164.000.

Schafer, Horst: *See—*
Flohrs, Peter; and Schafer, Horst, 3,942,244.

Schaller, Bernhard; and Volkmar, Willi, to Carl Walther Sportwaffenfabrik. Firing pin safety device for hand firearms. 3,942,278, Cl. 42-70.00F.

Schapiro, Norman: *See—*
Moreau, Eugene J.; Opalanko, Richard S.; Schapiro, Norman; and Lueders, Robert E., 3,942,974.

Schaumburg, Ernest Clyde, to Standard Oil Company. Blow molded gang-type vent for a multiple-cell electric storage battery. 3,943,008, Cl. 136-177.000.

Schein, Charles; and Le Minez, Jean-Jacques. Water-soluble coating composition and method for making same. 3,943,086, Cl. 260-29.70D.

Scher, Robert S.: *See—*
Meyer, Robert; and Scher, Robert S., 3,942,895.

Scherenberg, Hans O.; van Winsen, Friedrich H.; and Waxenberger, Erich, to Daimler-Benz AG. Front wheel suspension for motor vehicles. 3,942,816, Cl. 280-96.20R.

Scheuerle, Robert F.; and Vinkler, John F., to ESB Incorporated. Device for drying negative plates and plates made therewith. 3,943,002, Cl. 136-33.000.

Scheulen, Matthias: *See—*
Stabel, Michael; and Scheulen, Matthias, 3,942,453.

Schidlowski, Juan Carlos; and Walker, Stephen F., to McGregor, Alan P. Shoe box construction. 3,942,707, Cl. 229-2.50R.

Schiemann, Heinz: *See—*
Hermstein, Wolfgang; and Schiemann, Heinz, 3,943,433.

Schimmel, Karl F.: *See—*
Wismer, Marco; Schimmel, Karl F.; and Temple, Rodger G., 3,943,080.

Schinker, James J.: *See—*
Pryor, Harry H.; and Schinker, James J., 3,942,688.

Schirmann, Jean-Pierre; Mathais, Henri; Tellier, Pierre; and Weiss, Francis, to Produits Chimiques Ugine Kuhlmann. Process for the preparation of hydrazones. 3,943,132, Cl. 260-247.50R.

Schirmann, Jean-Pierre: *See—*
Tellier, Pierre; Schirmann, Jean-Pierre; Mathais, Henri; and Weiss, Francis, 3,943,152.

Schisler, Lee C.: *See—*
Carroll, Alban David, Jr.; and Schisler, Lee C., 3,942,969.

Schladitz, Hermann J. Apparatus for atomizing and/or vaporizing liquid in a stream of gas. 3,943,221, Cl. 261-142.000.

Schleppnik, Alfred A., to Monsanto Company. 4-(2'-Norbornyl)-2-butanones. 3,942,761, Cl. 252-522.000.

Schluep, Jean-Pierre, to Ebauches Bettlach S.A. Component parts for watch movements. 3,942,317, Cl. 58-59.000.

Schmalz, Roman; and Wolf, Robert J., to Logemann Brothers Company. Method and apparatus for forming bales. 3,942,429, Cl. 100-26.000.

Schmidt, Andreas; and Heller, Hansjorg, to CIBA-GEIGY Corporation. Polymeric malonates. 3,943,106, Cl. 260-47.00C.

Schmidt, Erich, to Maschinenfabrik Zuckermann Komm.Ges. System for shaping and finishing wood chair seats. 3,942,288, Cl. 51-76.00R.

Schmidt, Erich, to Maschinenfabrik Zuckermann Komm. Ges. Apparatus for shaping a wooden workpiece according to a template configuration. 3,942,566, Cl. 144-144.00R.

Schmidt, Jorn Marius, to Danfoss A/S. Method of producing a drying filter. 3,943,092, Cl. 260-37.0EP.

Schmidt, Robert R.: *See—*
Wagner, Klaus; Eue, Ludwig; Schmidt, Robert R.; and Roos, Ernst, 3,943,180.

Schmitt, Donald J., to Therm-O-Disc Incorporated. Thermostat. 3,943,480, Cl. 337-371.000.

Schmitzer, Willi; Raffel, Reiner; Althausen, Ferdinand; and Proksa, Ferdinand, to Maschinenfabrik Hennecke GmbH. Apparatus for continuous production of elongated foam plastics blocks. 3,942,925, Cl. 425-115.000.

Schmutzer, Joel J.; Klusendorf, John I.; and Grichnik, James J., to Advanced Instrument Development, Inc. X-ray tube rotating anode sensing detector. 3,943,356, Cl. 250-406.000.

Schneider, David; and Soares, Lewis, to Sweetheart Plastics, Inc. Measuring magnifier with special reticle. 3,942,896, Cl. 356-171.000.

Schneider, Walter: *See—*
Unbehaun, Olaf; Hampel, Uwe; Scholz, Norbert; Gassmann, Horst; Schneider, Walter; Hesser, Heinz; Herrmann, Walter; and Bechert, Bertold, 3,942,448.
Schneller, Peter: *See—*
Krekeler, Ulrich; and Schneller, Peter, 3,943,019.
Schoell, Harry L. Water jet propelling apparatus for boats. 3,942,464, Cl. 115-12.00R.
Scholz, Norbert: *See—*
Unbehaun, Olaf; Hampel, Uwe; Scholz, Norbert; Gassmann, Horst; Schneider, Walter; Hesser, Heinz; Herrmann, Walter; and Bechert, Bertold, 3,942,448.
Schonwald, Siegfried, to Siemens Aktiengesellschaft. Side channel ring compressor. 3,942,906, Cl. 415-53.00T.
Schoonman, Willem, to Lummus Company, The. Cooling tower. 3,942,588, Cl. 165-129.000.
Schroder, Lowell William. Gas drying apparatus and method. 3,942,330, Cl. 62-5.000.
Schroer, Walter; Reiff, Helmut; Dieterich, Dieter; and Berger, Karl, to Bayer Aktiengesellschaft. Polyurethane casein coating composition. 3,943,252, Cl. 428-262.000.
Schroter, Herbert: *See—*
Hilgers, Horst; and Schroter, Herbert, 3,943,538.
Schubeck, Phillip A., to Ford Motor Company. Carburetor temperature responsive throttle plate positioner. 3,943,206, Cl. 261-39.00B.
Schuil, Roelof Egbert, to U.S. Philips Corporation. Cathode-ray tube provided with a luminescent silicate. 3,943,400, Cl. 313-468.000.
Schuldt, Oswald: *See—*
Gorres, Bruno; Schuldt, Oswald; and van Winsen, Friedrich H., 3,942,502.
Schuller, Ronald A.; and Hogan, Al D., to Wheatley Company. Hydraulic damping means for hinged check valve. 3,942,551, Cl. 137-514.000.
Schulman, Joseph H., to G. D. Searle & Co. Rechargeable tissue stimulating system. 3,942,535, Cl. 128-419.0PS.
Schulman, Marvin: *See—*
Halik, Joseph John; Pitchon, Esra; Schulman, Marvin; Schwarz, Milton H.; and Yezek, Milton, 3,943,266.
Schultenkamper, Josef, to Gelenkwellenbau GmbH. Slide coupling for Cardan joint shafts. 3,942,336, Cl. 64-23.000.
Schumacher, Ernest W., to Virginia Chemicals, Inc. Combination liquid trapping suction accumulator and evaporator pressure regulator device. 3,942,332, Cl. 62-217.000.
Schuster, Friedrich: *See—*
Gassner, Hans; Thielemann, Max; and Schuster, Friedrich, 3,942,313.
Schuster, Gregor: *See—*
Linder, Ernst; and Schuster, Gregor, 3,942,493.
Schutze, Henry G.; and Wilder, Hulen L., to Exxon Research & Engineering Co. Polyolefin composition and use of same in alkaline solutions. 3,943,227, Cl. 423-232.000.
Schuwerk, Fritz. Arrangement for a rotating automobile mirror. 3,942,863, Cl. 350-62.000.
Schwanz, Wilfried; Fiala, Ernst; Warnecke, Rolf; and Buchholz, Peter, to Volkswagenwerk Aktiengesellschaft. Safety belt tensioning device. 3,942,819, Cl. 280-150.0SB.
Schwartz, Paul H., to Dura Products, Inc. Forming device with first and second material proportioning means. 3,942,924, Cl. 425-110.000.
Schwartz, Reinhard, to Robert Bosch GmbH. Fuel injection system. 3,942,497, Cl. 123-139.0AW.
Schwary, Robert E.; and Shurger, Joseph A., to Borg-Warner Corporation. Load limiting system. 3,942,413, Cl. 91-412.000.
Schwarz, Milton H.: *See—*
Halik, Joseph John; Pitchon, Esra; Schulman, Marvin; Schwarz, Milton H.; and Yezek, Milton, 3,943,266.
Schwarzenbach, Kurt, to Ciba-Geigy Corporation. Use of hydroxyphenylurethanes for stabilising elastomers. 3,943,096, Cl. 260-45.85A.
Schwenk, Kurt; and Grotewohl, Albert, to Volkswagenwerk Aktiengesellschaft. Suspension system for a steerable vehicle axle. 3,942,815, Cl. 280-96.20R.
Science Applications, Inc.: *See—*
Yengst, William C., 3,942,909.
Scientific Enterprises, Inc.: *See—*
Bolasny, Robert E., 3,943,407.
SCM Corporation: *See—*
De Sorga, Miksa; and McGinniss, Vincent D., 3,943,046.
Norris, Max E., 3,943,259.
Scope, Incorporated: *See—*
Nordstrom, Larry A.; and Szechy, Daniel J., 3,942,619.
Scott, Donald H., to Ford Motor Company. Valve train apparatus. 3,942,490, Cl. 123-90.400.
Scuffell, Derek Edgar: *See—*
Jones, Elwyn David; and Scuffell, Derek Edgar, 3,942,694.
Seal Incorporated: *See—*
Krueger, Theodore H.; and Spaulding, David B., 3,943,031.
Sealectro Corporation: *See—*
Bingham, Chalice, 3,943,470.
Sedam, Jason K.: *See—*
Amon, Anton; and Sedam, Jason K., 3,943,261.
Sedivy, Stanley J., to Zenith Radio Corporation. Shadow-mask color cathode ray tube with improved mask suspension system. 3,943,399, Cl. 313-404.000.
Seeley, Edward H.: *See—*
Seeley, Larry E.; and Seeley, Edward H., 3,942,680.
Seeley, Larry E.; and Seeley, Edward H. Spray paint container and attachment therefor. 3,942,680, Cl. 220-324.000.
Seeley, Wayne R.: *See—*
Kokjohn, Leonard D.; Seeley, Wayne R.; Brown, Charles A.; and King, Reynold C., 3,943,333.
Segre, Eugene J., to Syntex Corporation. Dispensing packages containing novel cyclic progestogen-interrupted estrogen oral contraceptive regimens. 3,942,641, Cl. 206-534.000.
Seite, Guy; and Gauthier, Michel, to Compteurs Schlumberger. Electronic ignition system for internal combustion engine. 3,942,491, Cl. 123-117.00R.
Seitz, Richard, to Veeder Industries, Inc. Computer auxiliary gear box. 3,943,340, Cl. 235-94.00R.
Seitz S.A.: *See—*
Voumard, Francois, 3,942,848.
Seltzer, Raymond; and Sherman, Paul D., to Ciba-Geigy Corporation. Processable high temperature polymers prepared from amine terminated polymers and cyanamides of polyfunctional secondary amines. 3,943,107, Cl. 260-65.000.
Seltzer, Raymond, to Ciba-Geigy Corporation. s-Triazine hexacarboxylic acids and trianhydrides. 3,943,133, Cl. 260-248.0CS.
Sembokuya, Iwajiro: *See—*
Kimura, Takeji; Sembokuya, Iwajiro; Hozumi, Hideo; and Oyama, Tomio, 3,943,280.
Semikron Gesellschaft fur Gleichrichterbau und Elektronik m.b.H.: *See—*
Flohrs, Peter; and Schafer, Horst, 3,942,244.
Sendor, Bernard T.; and Sendor, Mortimer S. Paper welding apparatus for bookbinding machinery. 3,943,024, Cl. 156-380.000.
Sendor, Mortimer S.: *See—*
Sendor, Bernard T.; and Sendor, Mortimer S., 3,943,024.
Senger, Gerhard Franz-Josef: *See—*
Grosch, Karl Alfred; Senger, Gerhard Franz-Josef; and Freudenstein, Georg, 3,942,370.
Senoski, Walter E. Model rocket-glider. 3,942,441, Cl. 102-34.100.
Sensormatic Electronics Corporation: *See—*
Humble, David Raymond; and Walters, Harry Godfrey, III, 3,942,829.
Servos, Gerald H.; and Horning, Kenneth R., to Instrumentation & Control Systems, Inc. Air caloric stimulation system. 3,942,515, Cl. 128-2.00R.
Sesztak, Emil: *See—*
Huszty, Denes; and Sesztak, Emil, 3,943,411.
Shackford, Ernest B., to General Electric Company. Tamper-resistant electrical meter housing. 3,943,441, Cl. 324-110.000.
Shankel, John C.; and Shankel, Marilou, to Lawrence Peska Associates, Inc., a part interest. String-peg game. 3,942,797, Cl. 273-97.00R.
Shankel, Marilou: *See—*
Shankel, John C.; and Shankel, Marilou, 3,942,797.
Shannon, John Martin; and Beale, Julian Robert Anthony, to U.S. Philips Corporation. Semiconductor devices. 3,943,552, Cl. 357-15.000.
Shannon, Patrick: *See—*
Wassilieff, Alexander; and Shannon, Patrick, 3,942,475.
Sharov, Alexei Lavrentievich: *See—*
Aristarkhov, Nikolai Nikolaevich; Efimov, Igor Alexandrovich; Zaitsev, Boris Ivanovich; Peters, Iskra Genrikhovna; Tymosh, Boris Severianovich; Filonov, Viktor Sergeevich; Sharov, Alexei Lavrentievich; Shildin, Alexei Ivanovich; Balashova, Galina Stepanovna; Bets, Nikolai Ivanovich; Skvortsov, Stanislav Alexandrovich; Yakovleva, Valentina Stepanovna; Zhuchkov, Ivan Ilich; Gorjunov, Vladimir Sergeevich; Petrov, Vladimir Alexeevich; Kevrolev, Vladimir Petrovich; Rybakov, Valery Nikolaevich; and Tverdovsky, Ninel Dmitrievich, 3,943,365.
Shaw, Don Hartwell. Wall rack for liquefied gas bottles. 3,942,752, Cl. 248-311.00R.
Sheldon, Norman A.; and Dosch, Erwin L., to Environmental Developers, Inc. Automatic telephone caller. 3,943,289, Cl. 179-6.00D.
Shell Oil Company: *See—*
Chiu, Ying C., 3,943,059.
Farmer, Robert, III; Lawson, Jimmie B.; and Sawyer, Webster M., Jr., 3,943,160.
Shelton, Richard M., to Sperry Rand Corporation. Shared processor data entry system. 3,943,493, Cl. 340-172.500.
Shepherd, Alan Arthur: *See—*
Jackson, Sydney; and Shepherd, Alan Arthur, 3,942,245.
Shepherd, J. D. Method and means for testing hydraulic pump. 3,942,375, Cl. 73-168.000.
Shepherd, Lawrence H., Jr.: *See—*
Ellis, Robert J.; Shepherd, Lawrence H., Jr.; and Starrett, Richmond M., 3,943,174.
Sheppard, Richard H. Fluid control system for dual power steering. 3,942,412, Cl. 91-411.00R.
Sherer, C. Richard; and Foyle, Russell M., to DND Corporation. Pipe cutting device. 3,942,248, Cl. 30-97.000.
Sheridan, Arthur L.: *See—*
Sipusic, Frank; and Sheridan, Arthur L., 3,942,221.
Sherman, Paul D.: *See—*
Seltzer, Raymond; and Sherman, Paul D., 3,943,107.
Shibata, Morio; Sawamura, Fujio; and Funatsu, Kunio, to Matsushita Electric Industrial Company, Ltd. Food processing control apparatus. 3,943,421, Cl. 318-484.000.
Shields, James J.: *See—*
Yannone, Robert A.; and Shields, James J., 3,943,371.
Yannone, Robert A.; and Shields, James J., 3,943,373.
Shields, Morton K.; and Shields, Russell K. Towing tractor construction. 3,942,823, Cl. 280-423.00R.

Shields, Russell K.: *See*—
Shields, Morton K.; and Shields, Russell K., 3,942,823.

Shildin, Alexei Ivanovich: *See*—
Aristarkhov, Nikolai Nikolaevich; Efimov, Igor Alexandrovich; Zaitsev, Boris Ivanovich; Peters, Iskra Genrikhovna; Tymosh, Boris Severianovich; Filonov, Viktor Sergeevich; Sharov, Alexei Lavrentievich; Shildin, Alexei Ivanovich; Balashova, Galina Stepanovna; Bets, Nikolai Ivanovich; Skvortsov, Stanislav Alexandrovich; Yakovleva, Valentina Stepanovna; Zhuchkov, Ivan Ilich; Gorjunov, Vladimir Sergeevich; Petrov, Vladimir Alexeevich; Kevrolev, Vladimir Petrovich; Rybakov, Valery Nikolaevich; and Tverdovsky, Ninel Dmitrievich, 3,943,365.

Shim, Kyung S., to Stauffer Chemical Company. Polyalkylene gylcol vinyl phosphates. 3,943,198, Cl. 260-929.000.

Shimada, Yukio, to Nissan Motor Company Limited. Apparatus for supporting catalytic converters on motor cars. 3,942,599, Cl. 180-64.00A.

Shimizu, Hideo: *See*—
Kawaguchi, Minoru; Yamasaki, Yasuki; Shimizu, Hideo; Taoka, Shinichi; and Hayamizu, Yoshio, 3,943,115.

Shimizu, Hiroshi, to Yasunaga Engineering Kabushiki Kaisha. Wiresaw. 3,942,508, Cl. 125-16.00R.

Shimotakahara, Tsumoru, to Hitachi, Ltd. Reflecting diffraction grating for minimizing anomalies. 3,942,873, Cl. 350-162.00R.

Shinano, Keizo: *See*—
Tokunaga, Yoshio; and Shinano, Keizo, 3,942,287.

Shlesinger, Bernard Edward, Jr.; and Mariner, Charlie D. Reed and reed switch therefor. 3,943,474, Cl. 335-151.000.

Shock, John P., to Ultrasonic Systems, Inc. Method of ultrasonic cryogenic cataract removal. 3,942,519, Cl. 128-24.00A.

Shomo, Glen Keller, III, to Comsonics, Inc. Method and apparatus for bi-directional communication via existing CATV system. 3,943,447, Cl. 325-308.000.

Shono, Tetsuji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Locking mechanism for interchangeable pentaprism view finder in single lens reflex camera. 3,943,533, Cl. 354-156.000.

Shortway, Harry A.: *See*—
Petry, Robert K.; and Shortway, Harry A., 3,943,018.

Shuler, Bernard R., to American Air Filter Company, Inc. Clean room perforated floor panel. 3,942,964, Cl. 55-494.000.

Shulman, Max J. Methods of treating burns using colophony containing preparations. 3,943,248, Cl. 424-196.000.

Shurger, Joseph A.: *See*—
Schwary, Robert E.; and Shurger, Joseph A., 3,942,413.

Siddall, John B.: *See*—
Henrick, Clive A.; and Siddall, John B., 3,943,157.

Sieczkowski, Joseph: *See*—
Evers, William J.; and Sieczkowski, Joseph, 3,942,537.

Siegert, Heiner; and Ristow, Ulrich, to Licentia Patent-Verwaltungs-GmbH. Fuel element exchange system. 3,943,037, Cl. 176-30.000.

Siemens Akteiengesellschaft: *See*—
Thiele, Gerd; and Keyl, Erwin, 3,943,426.

Siemens Aktiengesellschaft: *See*—
Auinger, Herbert; Bohm, Franz; Kuckuck, Helmut; and Voigt, Hans, 3,942,643.
Dietze, Wolfgang; and Kasper, Andreas, 3,943,218.
Fries, Paul, 3,942,586.
Haeusler, Jochen; Horn, Roland; and Kirschner, Werner, 3,943,434.
Heintze, Konrad, 3,943,429.
Hermstein, Wolfgang; and Schiemann, Heinz, 3,943,433.
Hok, Bertil, 3,942,382.
Kupka, Detlef; and Oberhuber, Alfred, 3,943,425.
Mund, Konrad, 3,943,005.
Otremba, Klaus, 3,943,450.
Platz, Winfried; and Heinzelmann, Karl-Georg, 3,943,366.
Schonwald, Siegfried, 3,942,906.
Thiele, Gerd, 3,943,419.
Veith, Richard, 3,943,387.
Ziegler, Albert, 3,943,036.

Signetics Corporation: *See*—
Russell, Lewis K.; Dao, Tich T.; and Muller, Richard S., 3,943,554.

Sillmann, Manfred, to Erwin Sick Optik-Elektronik. Coding strip for guiding containers. 3,942,276, Cl. 40-359.000.

Silver, David A.: *See*—
Bahder, George; Eager, George S., Jr.; and Silver, David A., 3,943,271.

Silverstein, Robert M., to Armour Pharmaceutical Company. Purification of plasminogen. 3,943,245, Cl. 424-101.000.

Simeau, Bernard Jules Alexandre, to Constructions Electriques R.V. Burner fuel supply control signal generating device. 3,943,386, Cl. 307-310.000.

Simhan, Krishna, to PPG Industries, Inc. Vapor deposition nozzle. 3,942,469, Cl. 118-48.000.

Simonson, Gordon L., to Durex Products, Inc. Segmented screen body. 3,943,054, Cl. 209-392.000.

Simpson, David Lee: *See*—
Thompson, Richard Telman; and Simpson, David Lee, 3,942,254.

Singer Company, The: *See*—
Hoyt, Carl E.; and Hale, Timothy E., 3,942,270.
Rogers, Howard D., 3,942,339.

Sipusic, Frank; and Sheridan, Arthur L., to Union Carbide Corporation. Apparatus for severing thin-walled tubing on a mandrel. 3,942,221, Cl. 17-42.000.

Sisak, David J. Enclosed gun lock. 3,942,691, Cl. 224-1.00R.

Sisler, Robert R.; and Helfrich, Robert C., to General Electric Company. Dryer control arrangement. 3,942,265, Cl. 34-45.000.

Sittmann, Brigitte, to Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH. Safety ski binding. 3,942,809, Cl. 280-11.35R.

Skala, Stephen F. Ink printer and method of printing with capillary control of pressurised ink. 3,943,525, Cl. 346-1.000.

Skega Aktiebolag: *See*—
Johansson, Gert, 3,942,239.

SKF Industrial Trading and Development Company B-V.: *See*—
Sundqvist, Yngve Bertil, 3,942,805.

Skorovarov, Vladimir Efremovich: *See*—
Tolstov, Jury Georgievich; Skorovarov, Vladimir Efremovich; Grinshtein, Boris Ilich; Stepanova, Valentina Gavrilovna; Bashkatov, Ivan Pavlovich; Vinitsky, Jury Danilovich; Balyasinsky, Valery Ottovich; Zhmurov, Valery Pavlovich; Natalkin, Alexandr Venediktovich; and Lazarev, Grigory Bentsionovich, 3,943,427.

Skorup, Gordon Edward, to RCA Corporation. LSI array using field effect transistors of different conductivity type. 3,943,551, Cl. 357-42.000.

Skvortsov, Stanislav Alexandrovich: *See*—
Aristarkhov, Nikolai Nikolaevich; Efimov, Igor Alexandrovich; Zaitsev, Boris Ivanovich; Peters, Iskra Genrikhovna; Tymosh, Boris Severianovich; Filonov, Viktor Sergeevich; Sharov, Alexei Lavrentievich; Shildin, Alexei Ivanovich; Balashova, Galina Stepanovna; Bets, Nikolai Ivanovich; Skvortsov, Stanislav Alexandrovich; Yakovleva, Valentina Stepanovna; Zhuchkov, Ivan Ilich; Gorjunov, Vladimir Sergeevich; Petrov, Vladimir Alexeevich; Kevrolev, Vladimir Petrovich; Rybakov, Valery Nikolaevich; and Tverdovsky, Ninel Dmitrievich, 3,943,365.

Sliwa, Jerzy: *See*—
Harpula, Jan; Piszak, Jur; Debski, Mieczyslaw; Rzepa, Tadeusz; Sliwa, Jerzy; and Heryan, Andrzej, 3,943,089.

Smick, William H., III: *See*—
Church, Armistead S.; Smick, William H., III; and Marsh, Walter W., 3,942,623.

Smith, Carl K., to Mid-Continent Pipeline Equipment Company. Technique for mixing granular materials. 3,942,772, Cl. 259-148.000.

Smith, Curtis J., to Container Corporation of America. Apparatus for helically winding container bodies. 3,942,418, Cl. 93-80.000.

Smith, David A. Self-steering device for sail boats. 3,942,461, Cl. 114-144.00C.

Smith, Fred T., to Sargent Industries, Inc. Refuse collection apparatus with personnel protection means. 3,942,601, Cl. 180-82.00R.

Smith, Gerald C.; Ellingson, Dennis L.; Johnson, Colin A.; and Rhee, Seong K., to Bendix Corporation, The. Bonding apparatus. 3,943,323, Cl. 219-85.000.

Smith, Herchel: *See*—
Herbst, David R.; and Smith, Herchel, 3,943,148.

Smith, Hubert Irvin; and Ott, Fred L., to Drill-Au-Mation, Inc. Drill pipe monitoring system. 3,942,594, Cl. 175-27.000.

Smith, Jack R.; and Reed, Terry J., to Westinghouse Electric Corporation. Combined cycle electric power plant and a gas turbine having an improved startup control especially useful in a backup control system. 3,943,372, Cl. 290-40.00R.

Smith, John Hugh: *See*—
Ridgway, Anthony Douglas; Smith, John Hugh; and Stainforth, Peter Terrick, 3,942,562.

Smith, Oliver Wendell; and Koleske, Joseph Victor, to Union Carbide Corporation. Thermosetting powder coatings. 3,943,082, Cl. 260-23.0AR.

Smith, Richard E.; and Oagley, Jack R., to Xerox Corporation. Developing systems. 3,942,474, Cl. 118-637.000.

SmithKline Corporation: *See*—
Berges, David Alan, 3,943,129.
Colella, Donald F.; and Kaiser, Carl, 3,943,173.
Colella, Donald F.; and Kaiser, Carl, 3,943,254.
DeMarinis, Robert M.; and Hoover, John R. E., 3,943,127.
DeMarinis, Robert M.; and Hoover, John R. E., 3,943,128.
De Marinis, Robert M.; and Hoover, John R. E., 3,943,131.
Garris, Charles R., 3,942,900.

Smoot, Thomas W.: *See*—
Dickey, Clarence A.; and Smoot, Thomas W., 3,943,211.

Smyth, Desmond Patrick Robertson: *See*—
Dakin, Gerald Frank, Jr.; Olney, Georges Louis; and Smyth, Desmond Patrick Robertson, 3,942,689

Snamprogetti S.p.A.: *See*—
Arrigoni, Virgilio; Gaetani, Bruno; and Ghezzi, Pietro, 3,942,359.

Snead, Edwin DeS. Portable conveyor load measuring apparatus. 3,942,625, Cl. 198-37.000.

Snow Brand Milk Products Co., Ltd.: *See*—
Hanzawa, Keiji; Takahashi, Yoshiyuki; Suga, Nobuyoshi; Kato, ojo; Handa, Makoto; Hayashi, Hiromichi; Taneya, Shinichi; and Sone, Toshimaro, 3,942,767.

Snyder, David E.; and Covington, Cecil E., to Textron, Inc. Grip-yoke assembly with a redundant centrifugal load support. 3,942,910, Cl. 416-141.000.

Soares, Lewis: *See*—
Schneider, David; and Soares, Lewis, 3,942,896.

Sobat, Dane. Elevator safety brake. 3,942,607, Cl. 187-77.000.

Societa' Italiana Resine S.I.R. S.p.A.: *See*—
Antonelli, Giambattista; Ferlazzo, Natale; and Aglietti, Giancarlo, 3,943,069.

Societa Italiana Telecomunicazioni Siemens S.p.A.: *See*—
Lyghounis, Evangelo, 3,943,466.

Societe Alsacienne de Constructions Mecaniques de Mulhouse: *See*—
Roger, Gauvain, 3,942,223.

Societe Anonyme D.B.A.: *See*—
Le Marchand, Claude; and Courbot, Pierre, 3,942,612.
Tobiasz, Andre, 3,942,843.
Warlop, Fernand; and Mery, Jean-Claude, 3,942,827.

Societe Anonyme des Usines Chausson: *See*—
Plegat, Alain Edouard, 3,942,703.

Societe Anonyme dite: VALLOUREC (Usines a tubes de Lorraine-Escaut et Vallourec Beunies: *See*—
Peytavin, Pierre, 3,942,650.

S.A. Etablissements Francois Salomon & Fils: *See*—
Salomon, Georges Pierre Joseph, 3,942,810.

Societe Anonyme: Glaenzer Spicer: *See*—
Orain, Michel, 3,942,335.

S.A. Texaco Belgium N.V.: *See*—
Dulog, Lothar G., 3,943,074.

Soderman, Reynaldo C. T.: *See*—
Fadiga, Dario J.; and Soderman, Reynaldo C. T., 3,942,778.

Sofec, Inc.: *See*—
Gruy, Robert H., 3,942,204.

Sokolov, Georgy Kondratievich: *See*—
Berzin, Albert Yazepovich; Buslovich, Solomon Leibovich; Bush, Gunar Yanovich; Gershanov, Gennady Khaimovich; Zhagars, Aivar Alfredovich; Kalognomos, Viktor Ivanovich; Sokolov, Georgy Kondratievich; Chervinsky, Jury Konstantinovich; and Yakovich, Zigmund Yazepovich, 3,943,505.

Sokolow, Nickolas N., to Beloit Corporation. Method of and means for effecting redistributive mixing in an extruder. 3,942,774, Cl. 259-191.000.

Solartron Electronic Group Limited, The: *See*—
Peattie, Richard Challinor, 3,943,506.

Sone, Toshimaro: *See*—
Hanzawa, Keiji; Takahashi, Yoshiyuki; Suga, Nobuyoshi; Kato, ojo; Handa, Makoto; Hayashi, Hiromichi; Taneya, Shinichi; and Sone, Toshimaro, 3,942,767.

Sony Corporation: *See*—
Takazawa, Makoto, 3,943,292.
Tsurushima, Katsuaki, 3,943,286.

Sosnove, William. Removable and disposable waste collector. 3,942,831, Cl. 294-55.000.

Southard, Archie F., Jr., to Chapman, Frank D., a part interest. Rotary cleaning device. 3,942,208, Cl. 15-104.01R.

Spaulding, David B.: *See*—
Krueger, Theodore H.; and Spaulding, David B., 3,943,031.

Special Polymers Limited: *See*—
Cordrey, Philip William; Frankland, John David; and Highgate, Donald James, 3,943,045.

Spector, George: *See*—
Corliss, Joseph J.; and Spector, George, 3,942,539.
Dawson, John D.; and Spector, George, 3,942,791.
Roach, Daniel F.; and Spector, George, 3,942,252.

Sperry Rand Corporation: *See*—
Butler, L. Dennis; and Wadsworth, Thomas H., 3,942,652.
Erspamer, James R., 3,942,257.
Hermansdorfer, James E.; and Swygert, Wilbert E., Jr., 3,943,382.
Lanning, Walter C., 3,943,350.
Shelton, Richard M., 3,943,493.

Spielberger, Seymour C.; and Savoca, Robert C., to Barnes Engineering Company. Radiometer probe. 3,942,891, Cl. 356-43.000.

Spiral Step Tool Company: *See*—
Breitenstein, Charles T.; and Nicolaus, Frank G., 3,942,544.

Spivack, John J.; and Luzzi, John J., to Ciba-Geigy Corporation. Compositions stabilized with polyol esters of benzoyloxybenzoic acids. 3,943,102, Cl. 260-45.85B.

Spurrell, Roworth Adrian John: *See*—
Allen, Kenneth Roy; Kenny, John; and Spurrell, Roworth Adrian John, 3,942,534.

Square D Company: *See*—
Brown, William Keith, 3,943,409.
Carroll, James C.; Curry, Johnny R.; Jorgensen, George N.; King, Frank D.; and McGoldrick, Gilbert A., 3,943,272.
Khalid, Joseph M., 3,943,473.
Oster, Clark L., 3,943,316.
Oster, Clark L.; and Khalid, Joseph M., 3,943,472.

Stabel, Michael; and Scheulen, Matthias, to Demag, A.G. Railway car mixer for the transport of molten metals. 3,942,453, Cl. 105-265.000.

Stackman, Robert W.; and Berardinelli, Frank M., to Celanese Corporation. Brominated aromatic polyphosphate copolymers. 3,943,199, Cl. 260-930.000.

Stacy, Robert J.: *See*—
Cantine, Thomas G., Jr.; and Stacy, Robert J., 3,942,432.

Stadler, Donald A.: *See*—
Furlette, James L.; and Stadler, Donald A., 3,942,338.

Stahlecker, Fritz, to Stahlecker, Fritz; and Stahlecker, Hans. Method and apparatus for start-spinning a thread on an open-end spinning machine. 3,942,311, Cl. 57-34.00R.

Stahlecker, Hans: *See*—
Stahlecker, Fritz, 3,942,311.

Stahlhuth, Paul H.: *See*—
Page, Joe W., Jr.; and Stahlhuth, Paul H., 3,942,392.

Stainforth, Peter Terrick: *See*—
Ridgway, Anthony Douglas; Smith, John Hugh; and Stainforth, Peter Terrick, 3,942,562.

Standard Oil Company: *See*—
Schaumburg, Ernest Clyde, 3,943,008.

Standard Telephone and Cables Limited: *See*—
Brewster, Arthur Edward; Weir, Donald Adams; Watson, Christopher Alan; George, Roger Geoffrey; and Phillips, Michael James, 3,943,489.

Standex International Corporation: *See*—
Patti, Vincent J., 3,943,417.

Stanford Research Institute: *See*—
Fishman, Norman; and Parkinson, Dean B., 3,943,188.
Ramsey, Stevens David, Jr., 3,943,278.

Stange, Klaus K., to Xerox Corporation. Self-actuating sheet inverter reverser. 3,942,785, Cl. 271-65.000.

Stanley Drug Products, Inc.: *See*—
Cook, Elton S.; and Berberich, Norbert J., Jr., 3,943,244.

Stanley Works, The: *See*—
Rutty, Edward Charles, 3,942,738.

Stanton, Stephen, to Precision Industries, Inc. Box stitching apparatus. 3,942,699, Cl. 227-3.000.

Starr, Anthony J., to Container Corporation of America. Sealable closure arrangement. 3,942,679, Cl. 220-355.000.

Starrett, Richmond M.: *See*—
Ellis, Robert J.; Shepherd, Lawrence H., Jr.; and Starrett, Richmond M., 3,943,174.

Stauffer Chemical Company: *See*—
Honig, Milton L.; and Walsh, Edward N., 3,943,200.
Jin, Jung Il, 3,943,113.
Kraft, Paul; and Altscher, Siegfried, 3,943,085.
Shim, Kyung S., 3,943,198.

Steelcase Inc.: *See*—
Baker, Richard H., 3,942,836.

Steensen, Wayne L.; and Saladini, Joseph J., to General Foods Corporation. Gelatin dessert composition and process. 3,943,265, Cl. 426-576.000.

Steger, Werner Thomas; Glynn, Brian; and Emmons, Donald Earl. Windshield wiper assembly. 3,942,212, Cl. 15-250.420.

Steiger, Klaus: *See*—
Frank, Egon; and Steiger, Klaus, 3,943,565.

Stein Industrie: *See*—
Delaplace, Lucien; and Mevel, Jean-Claude, 3,942,945.

Stein, Robert George; Crovetti, Aldo Joseph; and Couch, Terry Lee, to Abbott Laboratories. O,O-diethylthionophosphonyl-α-oximino-5-chloro-2-thienyl acetonitrile as insecticides. 3,943,249, Cl. 424-202.000.

Stein, Werner; Rupilius, Wolfgang; and Krings, Peter, to Henkel & Cie GmbH. Secondary alcohol ether ethoxylates. 3,943,178, Cl. 260-615.00B.

Steinbrenner, Hans: *See*—
Forster, Hans-Joachim M.; Eltze, Georg; and Steinbrenner, Hans, 3,942,393.

Steinway & Sons: *See*—
Pramberger, Joseph J., 3,942,403.

Stemmler, Hans, to Hoechst Aktiengesellschaft. Unilaterally closed hollow stick of shirred sausage casing with an inner closure formed from the tubular casing itself. 3,942,568, Cl. 150-1.000.

Stepanova, Valentina Gavrilovna: *See*—
Tolstov, Jury Georgievich; Skorovarov, Vladimir Efremovich; Grinshtein, Boris Ilich; Stepanova, Valentina Gavrilovna; Bashkatov, Ivan Pavlovich; Vinitsky, Jury Danilovich; Balyasinsky, Valery Ottovich; Zhmurov, Valery Pavlovich; Natalkin, Alexandr Venediktovich; and Lazarev, Grigory Bentsionovich, 3,943,427.

Stephan, Norbert: *See*—
Langhans, Walter; Uhlmann, Otto; and Stephan, Norbert, 3,942,352.

Stephens, Larry K.: *See*—
Johnson, Virgil E., Jr.; Etter, Robert J.; Lain, Horton W.; Stephens, Larry K.; and Van Dyke, Peter, 3,942,463.

Stetson, Harold M., to Martin Engineering Co. Air accumulator and aerator for materials-handling. 3,942,684, Cl. 222-3.000.

Stevenson, Robert Andrew, to General Electric Company Limited, The. Telephone users apparatus. 3,943,300, Cl. 179-90.00B.

Stewart, William H., Jr.: *See*—
Klein, Norman E.; and Stewart, William H., Jr., 3,942,342.

Stoddard, James C., to GTE Laboratories Incorporated. TV channel selector assembly. 3,943,451, Cl. 325-464.000.

Stoeffler, Bernhard Arnold, to Vulcan-Werk Wilhelm Diebold. Apparatus for filling containers with difficultly-flowable material. 3,942,561, Cl. 141-67.000.

Stoll, Max: *See*—
Winter, Max; Goldman, Irving M.; Gautschi, Fritz; Flament, Ivon; and Stoll, Max, 3,943,260.

Stone, Harris E. Cap assemblage for hard surface floor covering roll and method for making same. 3,942,638, Cl. 206-416.000.

Stone, Robert A.; and Leoni, Ray D., to United Technologies Corporation. Replaceable freewheel unit for helicopters. 3,942,387, Cl. 74-417.000.

Storz, Ralph Helmut: *See*—
Castleberry, John, Jr.; Cecelski, Edward Peter; and Storz, Ralph Helmut, 3,943,491.

Stotz, Wolf Gunter; and Reutter, Siegfried, to Sulzer Brothers Limited. Breast box having an adjustable lip in a paper making machine. 3,943,035, Cl. 162-272.000.

Strand, Tore G. H.: *See*—
Markoo, Eric L.; Strand, Tore G. H.; and Sandell, Thorsten W., 3,942,959.

Strandine, Eldon J.; and Malinow, Sidney, to Swift & Company. Poultry, partially disjointed. 3,942,222, Cl. 17-45.000.
Strange, Booth B., to Western Geophysical Company of America. Depth controllers for seismic streamer cables with dimension variable lift-producing means. 3,943,483, Cl. 340-7.0PC.
Strauss, George: *See—*
Czinka, Johann; Strauss, George; Portz, Wilhelm; Komorniczyk, Klaus; and Kandler, Joachim, 3,943,061.
Street, John: *See—*
May, Colin Paul; and Street, John, 3,943,342.
Stromberg-Carlson Corporation: *See—*
Clark, Robert J.; Davis, Gordon H.; and Zaky, Amin Y., 3,943,298.
Pommerening, Uwe A.; and Richards, Glenn L., 3,943,297.
Stroud, Henry John Francis, to British Gas Corporation. Production of combustible gases. 3,942,957, Cl. 48-196.00R.
Stucki, Frank F.; and Herbert, James, to United States of America, Air Force. Earth reference thin-film magnetometer compass exhibiting total tilt immunity. 3,942,258, Cl. 33-361.000.
Stumpp, Gerhard: *See—*
Eisele, Hermann; and Stumpp, Gerhard, 3,942,496.
Sturm, Ruger & Co. Inc.: *See—*
Ruger, William B.; and Larson, Lawrence L., 3,942,279.
Sturm, Werner, to Von Roll AG. Heat weldable, thermoplastic fitting. 3,943,334, Cl. 219-544.000.
Sturmer, Egon, to Sandoz Ltd. Organic compounds. 3,943,246, Cl. 424-177.000.
Suda, Seiji; and Inui, Tomoji, to Hitachi, Ltd. Fuel injection apparatus. 3,942,485, Cl. 123-32.0AE.
Sudmann, Jurgen; and Wenzel, Holger, to Justin Huppe, Firma. Splash partition. 3,942,197, Cl. 4-149.000.
Sudnishnikov, Boris Vasilievich; Kamensky, Veniamin Viktorovich; Varnello, Eduard Petrovich; and Tupitsyn, Sergei Konstantinovich. Self-propelled percussive machine for boring holes. 3,942,595, Cl. 175-99.000.
Suenaga, Tadayuki: *See—*
Miyagawa, Toshio; Inoue, Norio; and Suenaga, Tadayuki, 3,943,193.
Suga, Nobuyoshi: *See—*
Hanzawa, Keiji; Takahashi, Yoshiyuki; Suga, Nobuyoshi; Kato, ojo; Handa, Makoto; Hayashi, Hiromichi; Taneya, Shinichi; and Sone, Toshimaro, 3,942,767.
Sugihara, Hirosada: *See—*
Murata, Tadakazu; Nohara, Akira; Sugihara, Hirosada; and Sanno, Yasushi, 3,943,169.
Suiden Kabushiki Kaisha: *See—*
Kawai, Yuzo; Kawai, Hajime; and Hachisu, Ryoyu, 3,942,422.
Sulzberger, Johann: *See—*
Weigele, Gebhard; and Sulzberger, Johann, 3,942,207.
Sulzer Brothers Limited: *See—*
Fehr, Henri, 3,943,391.
Laubli, Fritz, 3,942,483.
Stotz, Wolf Gunter; and Reutter, Siegfried, 3,943,035.
Sumitomo Chemical Company, Ltd.: *See—*
Okaniwa, Tetuo; and Abeta, Sadaharu, 3,942,946.
Satomi, Takeo; Mukai, Kunio; Mine, Akihiko; Hino, Naganori; and Tateishi, Kohshi, 3,943,203.
Suzukamo, Gohu; Fukao, Masami; Nagase, Tsuneyuki; and Toshioka, Horosuke, 3,943,167.
Yamaguchi, Takashi; Abe, Yasuo; and Fujita, Yoshio, 3,943,239.
Sun Ventures, Inc.: *See—*
O'Reilly, Dorothy F.; Byrd, James J.; and Finlayson, Allan T., 3,943,531.
Sunazuka, Kensuke: *See—*
Kobayashi, Toshiyuki; Sunazuka, Kensuke; Mayama, Takeshi; and Okada, Akira, 3,943,238.
Sunbeam Corporation: *See—*
Ponczek, George Mark; and DeBoer, Herman Owen, Jr., 3,942,247.
Sundqvist, Yngve Bertil, to SKF Industrial Trading and Development Company B-V. Frictionless sealing operated by pressure medium. 3,942,805, Cl. 277-75.000.
Superscope, Inc.: *See—*
Tushinsky, Joseph S., 3,943,564.
Surna, Yan Alexandrovich: *See—*
Kashkina, Nadezhda Alexandrovna; Pormale, Milda Yanovna; Kalnish, Arvid Yanovich; and Surna, Yan Alexandrovich, 3,943,150.
Susnjara, Kenneth J., to Thermwood Corporation. Method of forming sharp bends in plastic faced flat panels. 3,943,022, Cl. 156-211.000.
Sutherland, Robert L.; and Naumann, Frederick E., to Federal Paper Board Company, Inc. Multi-unit packaging method and package. 3,942,631, Cl. 206-44.120.
Suzukamo, Gohu; Fukao, Masami; Nagase, Tsuneyuki; and Toshioka, Horosuke, to Sumitomo Chemical Company, Limited. Process for preparing trans-chrysanthemic acid. 3,943,167, Cl. 260-514.00H.
Suzuki, Tatsuro, to Yupiteru Ongaku Kogyo Kabushikikaisha. Magnetic head height changing device. 3,943,568, Cl. 360-106.000.
Suzuki, Yasoji, to Tokyo Shibaura Electric Co., Ltd. Logic circuit arrangement employing insulated gate field effect transistors. 3,943,377, Cl. 307-205.000.
Svendsen, Johan per Greijner, to Dyno Industrier A/S. Apparatus for manufacturing hollow articles, such as bowls, trays, cups and similar articles. 3,942,933, Cl. 425-324.00R.
Svenska Hymas Aktiebolag: *See—*
Hammarstrand, Sten Ove, 3,942,322.
Swanson, David B.; and Haden, Walter L., Jr., to Engelhard Minerals & Chemicals Corporation. Processing finely divided solids on a continuous vacuum belt filter. 3,943,233, Cl. 423-332.000.
Sweeny, Norman P.; and Thom, Karl Friedrich, to Minnesota Mining and Manufacturing Company. Sulfur dioxide - imidazole adducts. 3,943,146, Cl. 260-309.200.
Sweetheart Plastics, Inc.: *See—*
Schneider, David; and Soares, Lewis, 3,942,896.
Swift & Company: *See—*
Strandine, Eldon J.; and Malinow, Sidney, 3,942,222.
Swift, Richard James: *See—*
Barratt, Robert O.; Polcer, John; and Swift, Richard James, 3,942,482.
Swis, Philip E.; and Brown, Glenn M., to Cross Company, The. Drive-dynamometer system. 3,942,363, Cl. 73-116.000.
Swiss Aluminium Ltd.: *See—*
Favier, Michel, 3,942,587.
Swygert, Wilbert E., Jr.: *See—*
Hermansdorfer, James E.; and Swygert, Wilbert E., Jr., 3,943,382.
Syntex Corporation: *See—*
Segre, Eugene J., 3,942,641.
Szatkowski, Richard R., to Continental Can Company, Inc. Method for sinter molding plastic articles. 3,943,212, Cl. 264-24.000.
Szechy, Daniel J.: *See—*
Nordstrom, Larry A.; and Szechy, Daniel J., 3,942,619.
Tada, Minami. Disassemblable decorative light fixture. 3,943,353, Cl. 240-10.00R.
Tagaya, Ryosaku: *See—*
Takahashi, Toshio; Tagaya, Ryosaku; and Ehara, Toshiyasu, 3,942,897.
Taito Co., Ltd.: *See—*
Komatsu, Nobuhiko; Sakai, Sumio; Saito, Gosaku; Kikumoto, Syoichi; and Kimura, Keitaro, 3,943,247.
Tajima, Akira: *See—*
Furukawa, Hiroshi; and Tajima, Akira, 3,942,862.
Takahashi, Toshio; Tagaya, Ryosaku; and Ehara, Toshiyasu, to Eisai Co., Ltd. Method and apparatus for detecting solid substances contained in liquid. 3,942,897, Cl. 356-197.000.
Takahashi, Yoshiyuki: *See—*
Hanzawa, Keiji; Takahashi, Yoshiyuki; Suga, Nobuyoshi; Kato, ojo; Handa, Makoto; Hayashi, Hiromichi; Taneya, Shinichi; and Sone, Toshimaro, 3,942,767.
Takazawa, Makoto, to Sony Corporation. Automatic telephone answering apparatus. 3,943,292, Cl. 179-6.00R.
Takeda Chemical Industries, Ltd.: *See—*
Momiyama, Takenori; Mizutani, Keiiti; Oi, Masakazu; and Hanatani, Shinji, 3,942,934.
Takeda Chemical Industries, Ltd: *See—*
Murata, Tadakazu; Nohara, Akira; Sugihara, Hirosada; and Sanno, Yasushi, 3,943,169.
Takenaka Komuten Co., Ltd.: *See—*
Hirata, Yasuhiro; Kobayashi, Shoichi; Yamaguchi, Nobuo; Saito, Katshuhiko; Kimura, Mamoru; Iwasa, Yoshitel; Ueda, Masatoshi; and Magara, Hideki, 3,942,291.
Takeyama, Hidehiko; and Yato, Tsutomu, to Agency of Industrial Science & Technology. Cutting tool for controlling chip disposal. 3,942,229, Cl. 29-95.00R.
Takiguchi, Hisashi: *See—*
Masuda, Noboru; Nishino, Yu; and Takiguchi, Hisashi, 3,943,481.
Tamai, Masaharu; and Tanaka, Shigeo, to Fujitsu Limited. Character signal processing system. 3,943,490, Cl. 340-146.3 AG.
Tamai, Yasuo; Aonuma, Masashi; Nakamura, Matsuaki; Agawa, Hiroshi; and Akashi, Goro, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 3,943,012, Cl. 148-105.000.
Tanaka, Atsuyuki, to Minolta Camera Kabushiki Kaisha. Display unit equipped with copying device. 3,942,886, Cl. 355-1.000.
Tanaka, Minoru, to Hanazono Kogu Kabushiki Kaisha. Wire stripper. 3,942,397, Cl. 81-9.50A.
Tanaka, Shigeo: *See—*
Tamai, Masaharu; and Tanaka, Shigeo, 3,943,490.
Taneya, Shinichi: *See—*
Hanzawa, Keiji; Takahashi, Yoshiyuki; Suga, Nobuyoshi; Kato, ojo; Handa, Makoto; Hayashi, Hiromichi; Taneya, Shinichi; and Sone, Toshimaro, 3,942,767.
Tanoue, Ken: *See—*
Kobayashi, Nobuyuki; Tanoue, Ken; and Nakada, Masahiko, 3,942,495.
Taoka, Shinichi: *See—*
Kawaguchi, Minoru; Yamasaki, Yasuki; Shimizu, Hideo; Taoka, Shinichi; and Hayamizu, Yoshio, 3,943,115.
Tateishi, Kohshi: *See—*
Satomi, Takeo; Mukai, Kunio; Mine, Akihiko; Hino, Naganori; and Tateishi, Kohshi, 3,943,203.
Taylor, Larry L.: *See—*
Wielang, Joseph A.; and Taylor, Larry L., 3,943,062.
Taylor, Maurice J.; Northrup, Stephen D.; and Aspey, Wayne S., to Westinghouse Electric Corporation. High-voltage gas-type circuit-interrupter having improved gas-partitioning and particle collecting means. 3,943,315, Cl. 200-148.00B.
Taylor, Robert W.: *See—*
Griffies, David R.; Robison, Russell O.; and Taylor, Robert W., 3,942,251.
Taylor, Ted J.: *See—*
Leonard, Ralph R.; and Taylor, Ted J., 3,942,337.

TED Bildplatten Aktiengesellschaft AEG-Telefunken-Teldec: *See—*
Dickopp, Gerhard; Potter, Manfred; and Brehm, Otto, 3,943,274.
Tefft, Edward G.: *See—*
Kennedy, Richard W.; and Tefft, Edward G., 3,943,013.
Teledyne, Inc.: *See—*
Meyer, Robert; and Scher, Robert S., 3,942,895.
Telefonaktiebolaget L M Ericsson: *See—*
Lundberg, Karl Bengt Hakan, 3,943,444.
Telefunken Patentverwertungsgesellschaft m.b.H.: *See—*
Kaiser, Reinhold, 3,943,546.
Tellier, Pierre; Schirmann, Jean-Pierre; Mathais, Henri; and Weiss, Francis, to Produits Chimiques Ugine Kuhlmann. Method for preparing azines. 3,943,152, Cl. 260-345.100.
Tellier, Pierre: *See—*
Schirmann, Jean-Pierre; Mathais, Henri; Tellier, Pierre; and Weiss, Francis, 3,943,132.
Temple, Rodger G.: *See—*
Wismer, Marco; Schimmel, Karl F.; and Temple, Rodger G., 3,943,080.
Tennant Company: *See—*
Krier, Keith N.; Brown, Neil F.; and Waldhauser, Steven J. A., 3,942,218.
Tenteris, Ansis U.; Wetzel, Bruce W.; and Mosiniak, Dennis G., to Jobst Institute, Inc. Therapeutic intermittent compression apparatus. 3,942,518, Cl. 128-24.00R.
Terasawa, Yoshio, to Hitachi, Ltd. Semiconductor controlled rectifier. 3,943,548, Cl. 357-38.000.
Terazawa, Yasuto, to Toyo Kogyo Co., Ltd. Rotary piston type engine. 3,942,919, Cl. 418-83.000.
Teuscher, Leon A., to Xerox Corporation. Photoconductive composition of an aldehyde condensate. 3,943,108, Cl. 260-73.00R.
Tevis-Campbell Corporation: *See—*
Tevis, Felix H., 3,942,963.
Tevis, Felix H., to Tevis-Campbell Corporation. Vacuum cleaning system. 3,942,963, Cl. 55-380.000.
Texaco Inc.: *See—*
Peelman, Harold E., 3,943,362.
Texas Instruments Incorporated: *See—*
Awtrey, James D., 3,943,544.
Caywood, John Millard, 3,943,543.
Dromsky, John A., 3,943,011.
Lorenzo, Roberto D., 3,942,380.
Textron Inc.: *See—*
Egner, Ronald J., 3,942,406.
Snyder, David E.; and Covington, Cecil E., 3,942,910.
Therm-O-Disc Incorporated: *See—*
Place, Donald E., 3,943,478.
Schmitt, Donald J., 3,943,480.
Thermo Electron Corporation: *See—*
Noe, William B., 3,942,327.
Thermwood Corporation: *See—*
Susnjara, Kenneth J., 3,943,022.
Thiele, Gerd, to Siemens Aktiengesellschaft. Protective device for at least one thyristor. 3,943,419, Cl. 317-33.0SC.
Thiele, Gerd; and Keyl, Erwin, to Siemens Akteiengesellschaft. Thyristor column. 3,943,426, Cl. 321-8.00C.
Thielemann, Max: *See—*
Gassner, Hans; Thielemann, Max; and Schuster, Friedrich, 3,942,313.
Thiokol Corporation: *See—*
Lyles, Bobby J., 3,942,443.
Thom, Karl Friedrich: *See—*
Sweeny, Norman P.; and Thom, Karl Friedrich, 3,943,146.
Thomas & Betts Corporation: *See—*
Noorily, Peter, 3,942,750.
Thomas, Carlisle Alton, to Dias, Incorporated. Flexible tube pump. 3,942,915, Cl. 417-360.000.
Thomas, Gary C.: *See—*
Jacobson, Kenneth E.; and Thomas, Gary C., 3,942,716.
Thomas, Michael D.: *See—*
Ryder, Francis E.; and Thomas, Michael D., 3,942,280.
Thomas, Tedd Theodore, to Colgate-Palmolive Company. Package for bottle and cap. 3,942,667, Cl. 215-12.00R.
Thompson, Arden Ronald, to Minnesota Mining and Manufacturing Company. Transport torque and tension measurement device. 3,942,367, Cl. 73-134.000.
Thompson, Brian Hoyle; and Conway, Henry Lawrence, to British Gas Corporation. Composition control of gases. 3,942,958, Cl. 48-213.000.
Thompson, Darrell R.: *See—*
Hunter, Alastair Wilson; and Thompson, Darrell R., 3,942,532.
Thompson, George H. B., to International Standard Electric Corporation. Antireflection coatings for injection lasers. 3,943,462, Cl. 331-94.50H.
Thompson, Owen L. Gear selector safety lock. 3,942,614, Cl. 192-4.00A.
Thompson, Richard Telman; and Simpson, David Lee, to Illinois Tool Works Inc. True index gear tooth space checking machine. 3,942,254, Cl. 33-179.50R.
Thomson, Alan Russell; and Miles, Brynley John, to United Kingdom Atomic Energy Authority. Separation of molecules. 3,943,072, Cl. 252-455.00R.
Thomson-CSF: *See—*
Bui-Hai, Nhu, 3,943,519.
d'Auria, Luigi; Chevalier, Guy; Favreau, Michel; Huignard, Jean Pierre; Lacotte, Jean Pierre; and Puech, Claude, 3,943,559.
Gerlach, Pierre, 3,943,398.
Reymond, Jean-Claude; d'Auria, Luigi; and Chevalier, Guy, 3,943,358.
Thomson-CSF Visualisation et Traitement des Informations (T-VT): *See—*
Roman, Paul, 3,942,866.
Thomson, Francis D.: *See—*
Bell, Reuben H.; Boardway, Russell M., Jr.; Thomson, Francis D.; and Wysocki, Donald C., 3,943,077.
Thorsted Maskiner A/S: *See—*
Kristiansen, Knud Erik, 3,942,303.
Threshold Technology, Inc.: *See—*
Martin, Thomas B.; and Herscher, Marvin B., 3,943,295.
Tillmann, Heinz: *See—*
Kranz, Walter; and Tillmann, Heinz, 3,942,559.
Tillotson, Henry B., to Toro Company, The. Lawn mower starting interlock. 3,942,505, Cl. 123-179.00K.
Timmermeyer, Leo C.; Davis, Samuel; and Knight, William J., to Litton Systems, Inc. Electronic system pallet having a girdered false deck. 3,943,414, Cl. 317-122.000.
Timmons, Richard J.: *See—*
Wittenbrook, Lawrence S.; Timmons, Richard J.; and Fleming, Raymond D., 3,942,973.
Tisone, Thomas Charles: *See—*
Cruzan, Paul David; and Tisone, Thomas Charles, 3,943,047.
Tobiasz, Andre, to Societe Anonyme D.B.A. Method of braking a vehicle having an antiskid brake circuit, and a modulator for such a circuit. 3,942,843, Cl. 303-21.00F.
Tobin, Morris. Water hammer arrestor. 3,942,549, Cl. 137-207.000.
Tocci, Florindo, to Raymond Lee Organization Inc. Wrist purse with elastic securing means. 3,942,693, Cl. 224-28.00B.
Toda, Hisao: *See—*
Hattori, Masataka; and Toda, Hisao, 3,942,698.
Toda, Tadahide; and Kato, Takashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Fuel supply system for internal combustion engine. 3,942,494, Cl. 123-119.00R.
Todd, Barry S.: *See—*
Everly, John W.; and Todd, Barry S., 3,943,277.
Toepfl, Werner, to Ciba-Geigy AG. Dithiophosphates and their use as herbicides. 3,942,971, Cl. 71-87.000.
Toft, Kaj: *See—*
Schaeffer, Robert L.; and Toft, Kaj, 3,942,706.
Tokico Ltd.: *See—*
Hayashida, Yoshihiro, 3,942,326.
Hayashida, Yoshihiro; and Amano, Haruyuki, 3,943,486.
Tokunaga, Yoshio; and Shinano, Keizo, to Citizen Watch Company, Ltd. Contour grinders. 3,942,287, Cl. 51-5.00D.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Kidode, Masatsugu; and Asada, Haruo, 3,943,344.
Suzuki, Yasoji, 3,943,377.
Tolstov, Jury Georgievich; Skorovarov, Vladimir Efremovich; Grinshtein, Boris Ilich; Stepanova, Valentina Gavrilovna; Bashkatov, Ivan Pavlovich; Vinitsky, Jury Danilovich; Balyasinsky, Valery Ottovich; Zhmurov, Valery Pavlovich; Natalkin, Alexandr Venediktovich; and Lazarev, Grigory Bentsionovich. Apparatus for protecting the thyristors of a high-voltage controlled converter from overvoltage. 3,943,427, Cl. 321-11.000.
Tonka Corporation: *See—*
Dehner, Bernard J., 3,942,285.
Topol, George J., to Biospherics Incorporated. Process and apparatus for measuring dissolved gas. 3,942,792, Cl. 273-19.000.
Toro Company, The: *See—*
Tillotson, Henry B., 3,942,505.
Torphammar, Nils G. Y.; and Torphammar, Per G. Safety belt construction. 3,942,739, Cl. 242-107.40A.
Torphammar, Nils G. Y.; and Torphammar, Per G. Safety belt retractor assembly. 3,942,740, Cl. 242-107.40B.
Torphammar, Per G.: *See—*
Torphammar, Nils G. Y.; and Torphammar, Per G., 3,942,739.
Torphammar, Nils G. Y.; and Torphammar, Per G., 3,942,740.
Torrington Company, The: *See—*
Elmore, J. Russell, 3,942,616.
Toshiba Kikai Kabushiki Kaisha: *See—*
Kimura, Koya; and Maeda, Kunitaka, 3,943,443.
Wada, Yoneji, 3,942,360.
Toshioka, Horosuke: *See—*
Suzukamo, Gohu; Fukao, Masami; Nagase, Tsuneyuki; and Toshioka, Horosuke, 3,943,167.
Tosto, Paul S., to Cutler-Hammer, Inc. Tuning system for a microwave local oscillator. 3,943,459, Cl. 331-4.000.
Townsend, Robert H., to Xerox Corporation. Uniform pressure distributing self-leveling pinch roll for magnetic card transport system. 3,942,789, Cl. 271-274.000.
Toyo Ink Manufacturing Co., Ltd.: *See—*
Hirata, Isamu; Nishino, Makoto; and Saigo, Kazuhide, 3,942,261.
Toyo Jozo Company, Ltd.: *See—*
Morishita, Masataka; Inaba, Yoshihito; Fukushima, Mitsuru; Kobari, Sadami; Nagata, Akiho; and Abe, Jinnosuke, 3,943,063.
Toyo Kogyo Co., Ltd.: *See—*
Terazawa, Yasuto, 3,942,919.
Toyo Soda Manufacturing Co., Ltd.: *See—*
Miyagawa, Toshio; Inoue, Norio; and Suenaga, Tadayuki, 3,943,193.
Nonaka, Yuji; Kihara, Keiichi; Hironaka, Toshio; and Oda, Yasuhiro, 3,943,161.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Hanaoka, Masanori; and Inagaki, Masao, 3,942,503.
Kobayashi, Nobuyuki; Tanoue, Ken; and Nakada, Masahiko, 3,942,495.
Toda, Tadahide; and Kato, Takashi, 3,942,494.
Uozumi, Minoru; Kawano, Fumio; and Iwama, Norio, 3,942,577.

Trans-Consultants Aktiebolag: *See—*
Ericsson, Lennart, 3,942,460.

Trenary, Bryant, to Marion Power Shovel Company, Inc. Vehicle having front end load supporting member. 3,942,662, Cl. 214-140.000.

Treuner, Uwe D.; and Breuer, Hermann, to E. R. Squibb & Sons, Inc. [[(Thioalkoxy)thiocarbonyl]oxy]acetyl cephalosporin derivatives. 3,943,130, Cl. 260-243.00C.

Tringali, Dominick: *See—*
Dillard, John W.; and Tringali, Dominick, 3,943,336.

Tringali, Richard C.; and Turko, Michael, to American Hospital Supply Corporation. Seal strips for fume hoods. 3,942,421, Cl. 98-115.0LH.

Triplex Safety Glass Company Limited: *See—*
Jack, Harry Ross Scarlet; and Richards, Peter Henry, 3,942,967.

TRW Inc.: *See—*
Barnett, Barry Roger Michael; Alley, Gerald Francis; and Saunders, Brian Arthur, 3,942,226.
Whitaker, Richard A., 3,942,231.

Tschopp, Lloyd D., to Petro-Tex Chemical Corporation. Diolefin production and purification. 3,943,185, Cl. 260-680.00E.

Tsolis, Alexandros K.: *See—*
Richter, Sven U. K. A.; Tsolis, Alexandros K.; and Tsolis, Elefteria A., 3,943,154.

Tsolis, Elefteria A.: *See—*
Richter, Sven U. K. A.; Tsolis, Alexandros K.; and Tsolis, Elefteria A., 3,943,154.

Tsuchiya, Kiichi, to Isuzu Motors Limited. Vehicle speed detecting sensor for anti-lock brake control system. 3,942,557, Cl. 137-810.000.

Tsukamoto, Hidehiko: *See—*
Maeda, Nobutaka; and Tsukamoto, Hidehiko, 3,942,348.

Tsumita, Toru; and Kuwabara, Seishi, to Mitsui Pharmaceuticals, Incorporated. Tuberculin active proteins and peptides from the cells of tubercle bacilli. 3,943,119, Cl. 260-112.50R.

Tsuruda, Tadao: *See—*
Moriyama, Hiromi; Kuwabara, Motosuke; Tsuruda, Tadao; and Hamada, Tatuo, 3,943,299.

Tsurushima, Katsuaki, to Sony Corporation. Variable gain control circuit. 3,943,286, Cl. 179-1.0GQ.

Tupitsyn, Sergei Konstantinovich: *See—*
Sudnishnikov, Boris Vasilievich; Kamensky, Veniamin Viktorovich; Varnello, Eduard Petrovich; and Tupitsyn, Sergei Konstantinovich, 3,942,595.

Turek, Michael H., to Monsanto Company. Method improvements for controlling parison length. 3,943,214, Cl. 264-40.000.

Turko, Michael: *See—*
Tringali, Richard C.; and Turko, Michael, 3,942,421.

Turner, Norman Jack, to Australian Controls Industries Pty., Ltd. Energy regulator. 3,943,479, Cl. 337-347.000.

Tushinsky, Joseph S., to Superscope, Inc. Stereophonic recording and playback apparatus. 3,943,564, Cl. 360-55.000.

Tuxco Corporation: *See—*
Blomgren, Oscar C., Sr.; and Blomgren, Oscar C., Jr., 3,942,575.

Tverdovsky, Ninel Dmitrievich: *See—*
Aristarkhov, Nikolai Nikolaevich; Efimov, Igor Alexandrovich; Zaitsev, Boris Ivanovich; Peters, Iskra Genrikhovna; Tymosh, Boris Severianovich; Filonov, Viktor Sergeevich; Sharov, Alexei Lavrentievich; Shildin, Alexei Ivanovich; Balashova, Galina Stepanovna; Bets, Nikolai Ivanovich; Skvortsov, Stanislav Alexandrovich; Yakovleva, Valentina Stepanovna; Zhuchkov, Ivan Ilich; Gorjunov, Vladimir Sergeevich; Petrov, Vladimir Alexeevich; Kevrolev, Vladimir Petrovich; Rybakov, Valery Nikolaevich; and Tverdovsky, Ninel Dmitrievich, 3,943,368.

Tymosh, Boris Severianovich: *See—*
Aristarkhov, Nikolai Nikolaevich; Efimov, Igor Alexandrovich; Zaitsev, Boris Ivanovich; Peters, Iskra Genrikhovna; Tymosh, Boris Severianovich; Filonov, Viktor Sergeevich; Sharov, Alexei Lavrentievich; Shildin, Alexei Ivanovich; Balashova, Galina Stepanovna; Bets, Nikolai Ivanovich; Skvortsov, Stanislav Alexandrovich; Yakovleva, Valentina Stepanovna; Zhuchkov, Ivan Ilich; Gorjunov, Vladimir Sergeevich; Petrov, Vladimir Alexeevich; Kevrolev, Vladimir Petrovich; Rybakov, Valery Nikolaevich; and Tverdovsky, Ninel Dmitrievich, 3,943,365.

Ube Industries, Ltd.: *See—*
Kawaguchi, Minoru; Yamasaki, Yasuki; Shimizu, Hideo; Taoka, Shinichi; and Hayamizu, Yoshio, 3,943,115.
Nakatomi, Shunsuke; Yamamura, Takemi; and Akiba, Yoshikazu, 3,943,186.

Uchidoi, Masanori, to Canon Kabushiki Kaisha. Pulse generating apparatus having a chattering pulse elimination circuit. 3,943,381, Cl. 307-247.00A.

Uchino, Susumu, to Coca-Cola Company, The. Loading apparatus in motor truck. 3,942,665, Cl. 214-516.000.

Uddeholms Aktiebolag: *See—*
Oberg, Karl-Erik; and Norberg, Lars-Gunnar, 3,942,978.

Ueda, Masatoshi: *See—*
Hirata, Yasuhiro; Kobayashi, Shoichi; Yamaguchi, Nobuo; Saito, Katshuhiko; Kimura, Mamoru; Iwasa, Yoshitel; Ueda, Masatoshi; and Magara, Hideki, 3,942,291.

Uhlmann, Otto: *See—*
Langhans, Walter; Uhlmann, Otto; and Stephan, Norbert, 3,942,352.

Ultrasonic Systems, Inc.: *See—*
Shock, John P., 3,942,519.

UMC Industries, Inc.: *See—*
Erickson, Gustav F., 3,942,542.
Pryor, Harry H.; and Schinker, James J., 3,942,688.

Umeda, Yasuji: *See—*
Murata, Hikaru; Umeda, Yasuji; Sakurai, Yasusada; and Doi, Yasuo, 3,942,548.

Unbehaun, Olaf; Hampel, Uwe; Scholz, Norbert; Gassmann, Horst; Schneider, Walter; Hesser, Heinz; Herrmann, Walter; and Bechert, Bertold, to BASF Aktiengesellschaft. Apparatus for consolidating ballast. 3,942,448, Cl. 104-11.000.

Underwood, John H.: *See—*
Brady, Donnie G.; Deck, Harold R.; Jones, Faber B.; and Underwood, John H., 3,943,164.

UNELEC: *See—*
Hennemann, Jean, 3,942,857.

Union Carbide Corporation: *See—*
Borden, George Wayne; and Carder, Charles Hobert, 3,943,103.
Kupcikevicius, Vytautas, 3,942,624.
Prokai, Bela; and Kanner, Bernard, 3,943,156.
Sipusic, Frank; and Sheridan, Arthur L., 3,942,221.
Smith, Oliver Wendell; and Koleske, Joseph Victor, 3,943,082.

Union Oil Company of California: *See—*
Ward, John W., 3,943,051.

Uniroyal A.G.: *See—*
Grosch, Karl Alfred; Senger, Gerhard Franz-Josef; and Freudenstein, Georg, 3,942,370.

Uniroyal, Inc.: *See—*
Anthony, Roy, 3,942,852.

United Company, The: *See—*
Cover, Paul F., 3,942,629.

United Kingdom Atomic Energy Authority: *See—*
Pollock, James Francis; Dunn, Peter Douglas; Rice, Graham; and Power, Basil Dixon, 3,943,330.
Thomson, Alan Russell; and Miles, Brynley John, 3,943,072.
Whitehead, Eric, 3,942,930.

U.S. Filter Company: *See—*
Duyckinck, Robert W., 3,942,962.

United States of America
Air Force: *See—*
Maier, Dennis A., 3,942,894.
Ortwerth, Paul J.; Ormand, Lowell W.; and Wilkinson, David B., 3,942,320.
Pledger, Richard Payne, 3,942,879.
Stucki, Frank F.; and Herbert, James, 3,942,258.

Army: *See—*
Advokat, Theodor, 3,942,442.
Apstein, Maurice; Reggia, Frank; and Jones, Howard S., Jr., 3,943,520.
Baker, George H., 3,943,367.
Costain, Thomas S., 3,943,235.
Cruzan, Orval R., 3,942,446.
Hanson, Orlando W., 3,943,516.
Kirchner, Harold G., 3,942,486.
LoPresti, Arthur; and Baumann, Robert P., 3,943,209.
Sayles, David C., 3,942,319.
Vogt, Gottfried F., 3,943,517.
Wells, Franklin B., 3,943,017.

Energy Research and Development Administration: *See—*
Martin, Earl C.; and Bruns, Lester E., 3,943,204.
Wielang, Joseph A.; and Taylor, Larry L., 3,943,062.

Energy Research & Development Administration: *See—*
Cohn, Charles E., 3,943,458.

General Counsel-Code GP: *See—*
Dimeff, John, 3,943,368.

Interior: *See—*
Babcock, Clarence O., 3,942,329.
Li, Yi-Sheng; Perry, Eugene N.; Jagow, Robert B.; and Wagner, Phillip A., 3,942,524.

National Aeronautics and Space Administration; administrator; with respect to an invention of:
Maserjian, Joseph. Method and apparatus for measurement of trap density and energy distribution in dielectric films. 3,943,442, Cl. 324-158.00R.
McDougal, Allan R.; and Norman, Robert M. Zero torque gear head wrench. 3,942,398, Cl. 81-56.000.

Navy: *See—*
Afendykiw, Marko; Boyle, John M.; and Hendrix, Charles E., 3,943,514.
Aisenberg, Sol; and Chang, Kuo Wei, 3,943,465.
Baker, Charles; Harkness, Benjamin F.; and Norris, Alfred W., 3,942,445.
Black, Stanley A.; and Jenkins, James F., 3,942,511.
Bladen, Thomas H., 3,943,455.
Everly, John W.; and Todd, Barry S., 3,943,277.
Green, Robert S., 3,942,396.
Greene, Gordon A., 3,942,444.
Johnson, Virgil E., Jr.; Etter, Robert J.; Lain, Horton W.; Stephens, Larry K.; and Van Dyke, Peter, 3,942,463.
Lehmberg, Robert H., 3,943,457.
Malone, Warren L., 3,942,890.
Miles, Melvin H., 3,943,001.
Miley, Frank P., 3,943,515.

Murch, Robert M., 3,943,196.
Murch, Robert M., 3,943,197.
Murphree, Francis J.; Warner, Henry L.; and McLeroy, Edward G., Jr., 3,943,482.
Orton, Criley, 3,943,510.
Van Orsdel, Kenneth A.; and Dick, John O., 3,942,447.

U.S. Philips Corporation: *See—*
Belouet, Christian; and Bunel, Jacques Charles Louis, 3,942,770.
La Grouw, Coenraad Maria; Van Den Wittenboer, Cornelus Wilhelmus Theresia; and Hubers, Hendrik Jan, 3,942,993.
Schuil, Roelof Egbert, 3,943,400.
Shannon, John Martin; and Beale, Julian Robert Anthony, 3,943,552.

United States Steel Corporation: *See—*
Kachik, Robert H.; Manganello, Samuel J.; and Pignocco, Arthur J., 3,942,578.
Lohrer, Leo, 3,942,690.

United Technologies Corporation: *See—*
Brienza, Michael J.; and Weindling, Frederik, 3,943,464.
Hansen, Kenneth B.; and Olson, Robert K., 3,942,757.
Stone, Robert A.; and Leoni, Ray D., 3,942,387.

Universal Business Machines: *See—*
Dillard, John W.; and Tringali, Dominick, 3,943,336.

Universal Oil Products Company: *See—*
Mitsche, Roy T., 3,943,070.
Mitsche, Roy T., 3,943,071.
Neuzil, Richard W.; and Rosback, Donald H., 3,943,182.
Rosback, Donald H., 3,943,183.
Rosback, Donald H., 3,943,184.

University of California, The Regents of the: *See—*
Friedel, William C., Jr.; Dietz, Charles F.; and Marshall, Lowell K., 3,942,590.

University of Kansas Endowment Association: *See—*
Higuchi, Takeru; Repta, Arnold J.; and Bourne, David W. A., 3,943,137.

Unwin Electronics Ltd.: *See—*
Whitman, Jeremy Hugh, 3,943,503.

Uozumi, Minoru; Kawano, Fumio; and Iwama, Norio, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Toyota Chuo Kenkyusho. Method and apparatus for controlling electromagnetic casting. 3,942,577, Cl. 164-4.000.

Uraya, Toru: *See—*
Matsuyama, Teruko; Nishida, Tadao; and Uraya, Toru, 3,942,636.

Urban, Otfried: *See—*
Mundt, Peter Hans Ernst; Urban, Otfried; and Neuhold, Arnold, 3,943,029.

Urkowitz, Harry; Perry, Richard Prather; and Weinberg, Leonard, to RCA Corporation. Digital interpolator for reducing time quantization errors. 3,943,346, Cl. 235-152.000.

USM Corporation: *See—*
Morrison, Ralph A.; and Hanson, Waldo B., 3,942,701.

Vaca, Humberto. Egg aid. 3,942,427, Cl. 99-571.000.

Valley National Bank: *See—*
Richardson, William R., 3,942,477.

Valmet Oy: *See—*
Pesonen, Tapio, 3,942,603.

Van Den Wittenboer, Cornelus Wilhelmus Theresia: *See—*
La Grouw, Coenraad Maria; Van Den Wittenboer, Cornelus Wilhelmus Theresia; and Hubers, Hendrik Jan, 3,942,993.

Vanderheyden, Robert Louis Marie, to Addressograph-Multigraph Corporation. Photographic developing apparatus. 3,943,540, Cl. 354-318.000.

van der Lely, Ary; and Bom, Cornelis Johannes Gerardus. Crop treatment devices. 3,942,267, Cl. 34-236.000.

Van Dyke, Peter: *See—*
Johnson, Virgil E., Jr.; Etter, Robert J.; Lain, Horton W.; Stephens, Larry K.; and Van Dyke, Peter, 3,942,463.

Van Haaften, Egbert, to Bulova Watch Company, Inc. Sectioned casing for electronic watches. 3,942,316, Cl. 58-23.00R.

Vanhoof, Pierre M.; and Clarebout, Pierre M., to A. Christiaens, Societe Anonyme. Derivatives of 2-amino-(1,2,3,4-tetrahydronaphthalene), the preparation and use thereof. 3,943,172, Cl. 260-570.50P.

Van Leuven, Robert W.: *See—*
Blom, Gerald E.; and Van Leuven, Robert W., 3,942,633.

Van Orsdel, Kenneth A.; and Dick, John O., to United States of America, Navy. Fuzing system. 3,942,447, Cl. 102-70.20P.

van Winsen, Friedrich H.: *See—*
Gorres, Bruno; Schuldt, Oswald; and van Winsen, Friedrich H., 3,942,502.
Scherenberg, Hans O.; van Winsen, Friedrich H.; and Waxenberger, Erich, 3,942,816.

Vapor Corporation: *See—*
Fluder, Chester H.; and Heeney, Matthew R., 3,943,475.
McInerney, Michael J.; and Brady, Robert T., 3,942,355.

Varnello, Eduard Petrovich: *See—*
Sudnishnikov, Boris Vasilievich; Kamensky, Veniamin Viktorovich; Varnello, Eduard Petrovich; and Tupitsyn, Sergei Konstantinovich, 3,942,595.

Vater, Wulf: *See—*
Bossert, Friedrich; Meyer, Horst; and Vater, Wulf, 3,943,140.

Veeder Industries, Inc.: *See—*
Seitz, Richard, 3,943,340.

Veith, Richard, to Siemens Aktiengesellschaft. Process for making a piezoelectric body. 3,943,387, Cl. 310-8.000.

Veldman, Bernard T., Sr.: *See—*
Doyle, Lester W.; and Veldman, Bernard T., Sr., 3,942,849.

Velsicol Chemical Corporation: *See—*
Richter, Sidney B.; and Krenzer, John, 3,942,972.

Venot, Jean, to Chavanoz S.A. Machine for treating a textile thread by false twist. 3,942,312, Cl. 57-34.0HS.

Vepa Aktiengesellschaft: *See—*
Fleissner, Hans, 3,942,695.

Verdol S.A.: *See—*
Frappe, Pierre, 3,943,422.

Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH: *See—*
Sittmann, Brigitte, 3,942,809.

Vernaleken, Hugo: *See—*
Margotte, Dieter; Lachmann, Burkhard; Vernaleken, Hugo; Rudolph, Hans; and Cohnen, Wolfgang, 3,943,094.

Vestergaard, Jorgen H.; and Ragsdale, Gary W., to General Electric Company. Process for preparing polycarbonates with a metal chelating agent. 3,943,101, Cl. 260-45.85R.

Vetrano, James B., to Rockwell International Corporation. Preparation of metal hydride bodies by improved powder metallurgy process. 3,943,210, Cl. 264-.500.

Vicendese, Anthony P.; and Vicendese, Frank. Chemical dispensing lawn mower arrangement. 3,942,308, Cl. 56-16.800.

Vicendese, Frank: *See—*
Vicendese, Anthony P.; and Vicendese, Frank, 3,942,308.

Victor Company of Japan, Ltd.: *See—*
Masuda, Isao; and Yamazaki, Masami, 3,943,303.

Victor Comptometer Corporation: *See—*
Blomquist, James E., 3,942,622.

Vinitsky, Jury Danilovich: *See—*
Tolstov, Jury Georgievich; Skorovarov, Vladimir Efremovich; Grinshtein, Boris Ilich; Stepanova, Valentina Gavrilovna; Bashkatov, Ivan Pavlovich; Vinitsky, Jury Danilovich; Balyasinsky, Valery Ottovich; Zhmurov, Valery Pavlovich; Natalkin, Alexandr Venediktovich; and Lazarev, Grigory Bentsionovich, 3,943,427.

Vinkler, John F.: *See—*
Scheuerle, Robert F.; and Vinkler, John F., 3,943,002.

Virginia Chemicals, Inc.: *See—*
Schumacher, Ernest W., 3,942,332.

Vissers, Herbert, to Expert N.V. Apparatus for cooling castings and for cooling and drying moulding sand. 3,942,644, Cl. 209-86.000.

Vital, Zoltan; and Orban, Jean, to Ponder and Best, Inc. Control of electronically generated light pulses. 3,943,406, Cl. 315-241.00P.

Vivanco Sanchez, Jesus: *See—*
Ruiz-Fornells Gonzalez, Ramon; Perez Gomez, Gonzalo; and Vivanco Sanchez, Jesus, 3,942,372.

Vizelyi, Gabor; and Meszaros, Bela. Cigarette dispenser and an electric lighter. 3,943,327, Cl. 219-261.000.

Vockenhuber, Karl: *See—*
Besenmatter, Walter; Muszumanski, Trude; and Kurz, Gunter, 3,942,874.

Vogt, Gottfried F., to United States of America, Army. Adaptive polarization receiving system. 3,943,517, Cl. 343-100.0PE.

Voigt, Hans: *See—*
Auinger, Herbert; Bohm, Franz; Kuckuck, Helmut; and Voigt, Hans, 3,942,643.

Volkmar, Willi: *See—*
Schaller, Bernhard; and Volkmar, Willi, 3,942,278.

Volkswagenwerk Aktiengesellschaft: *See—*
Schwanz, Wilfried; Fiala, Ernst; Warnecke, Rolf; and Buchholz, Peter, 3,942,819.
Schwenk, Kurt; and Grotewohl, Albert, 3,942,815.

Vollmer, Hans Peter: *See—*
Arnold, Gunther; Paal, Gabor; Wilhelm, Alfred; Halfar, Kurt; and Vollmer, Hans Peter, 3,942,996.

Von Roll AG: *See—*
Sturm, Werner, 3,943,334.

Voronov, Jury Viktorovich: *See—*
Korenkov, Vladimir Nikolaevich; Romanenko, Vitaly Ivanovich; Kuznetsov, Sergei Ivanovich; and Voronov, Jury Viktorovich, 3,943,055.

Vorwick, Dean: *See—*
Buckman, Thomas P.; and Vorwick, Dean, 3,942,228.

Vosicky, Jan, to Westinghouse Electric Corporation. Electric motor direction indicating device. 3,943,504, Cl. 340-271.000.

Vostovich, Joseph Edward: *See—*
Prober, Maurice; and Vostovich, Joseph Edward, 3,942,937.

Voumard, Francois, to Seitz S.A. Shock absorbing pivot bearing for rotary watch parts. 3,942,848, Cl. 308-159.000.

Vulcan-Werk Wilhelm Diebold: *See—*
Stoeffler, Bernhard Arnold, 3,942,561.

W. R. Grace & Co.: *See—*
Eberle, Richard Francis; and Kroetz, John Alden, 3,942,668.

Waage, Bard Meier, to Investrop A.G. Package and method for storing blood. 3,942,529, Cl. 128-272.000.

Wada, Yoneji, to Toshiba Kikai Kabushiki Kaisha. Method and apparatus for measuring the degree of contamination of liquids. 3,942,360, Cl. 73-61.00R.

Waddill, Harold George, to Jefferson Chemical Company, Inc. Method of accelerating epoxy curing. 3,943,104, Cl. 260-47.0EN.

Wadsworth, Thomas H.: *See—*
Butler, L. Dennis; and Wadsworth, Thomas H., 3,942,652.

Wagner, John Bradley. Piercing sharp pointed gypsum board screw for metal studs. 3,942,405, Cl. 85-46.000.

Wagner, Klaus; Eue, Ludwig; Schmidt, Robert R.; and Roos, Ernst, to Bayer Aktiengesellschaft. 2,4-Bis-(trifluoromethyl)-6-nitrophenol compounds and herbicidal compositions. 3,943,180, Cl. 260-622.00R.

Wagner, Kuno: *See—*
Dietrich, Werner; Wagner, Kuno; and Eifler, Willi, 3,943,158.
Quiring, Bernd; and Wagner, Kuno, 3,943,159.

Wagner, Paul D.: *See—*
Keuper, John J.; and Wagner, Paul D., 3,943,392.

Wagner, Phillip A.: *See—*
Li, Yi-Sheng; Perry, Eugene N.; Jagow, Robert B.; and Wagner, Phillip A., 3,942,524.

Waldhauser, Steven J. A.: *See—*
Krier, Keith N.; Brown, Neil F.; and Waldhauser, Steven J. A., 3,942,218.

Waldman, Martin, to Marjo Systems, Inc. Alarm system for three-element windows. 3,943,485, Cl. 340-274.00R.

Walker, Elbert: *See—*
Reeve, John R., Jr.; Busse, Ralph; Walker, Elbert; Welch, Raymond L.; Moore, Hermus C., Jr.; and Jones, Milton P., 3,942,593.

Walker, Stephen F.: *See—*
Schidlowski, Juan Carlos; and Walker, Stephen F., 3,942,707.

Wallen, Lennart E. O., to Lennart Wallen & Co AB. Screw thickener. 3,943,033, Cl. 162-232.000.

Wallen, Lennart E. O., to Lennart Wallen & Co AB. Dewatering and homogenizing apparatus. 3,943,034, Cl. 162-232.000.

Wallis, Keith H. J. Incinerator and method. 3,942,455, Cl. 110-8.00C.

Walls, David L. Paint applicator. 3,942,209, Cl. 15-118.000.

Walmsley, Keith: *See—*
Kidd, Alan Lister; Eaves, Douglas; and Walmsley, Keith, 3,943,477.

Walsh, Edward N.: *See—*
Honig, Milton L.; and Walsh, Edward N., 3,943,200.

Walters, Harry Godfrey, III: *See—*
Humble, David Raymond; and Walters, Harry Godfrey, III, 3,942,829.

Walus, Richard L.; and Quarve, Vernon K., to Possis Corporation. Applicator for molten thermoplastic adhesives. 3,942,687, Cl. 222-146.0HE.

Wankel GmbH: *See—*
Wieland, Werner, 3,942,917.

Ward, John W., to Union Oil Company of California. Hydrocarbon conversion processes utilizing rejuvenated zeolite catalysts. 3,943,051, Cl. 208-111.000.

Warlop, Fernand; and Mery, Jean-Claude, to Societe Anonyme D.B.A. Mechanical control device for a disc brake. 3,942,827, Cl. 188-196.0BA.

Warnecke, Rolf: *See—*
Schwanz, Wilfried; Fiala, Ernst; Warnecke, Rolf; and Buchholz, Peter, 3,942,819.

Warner, Henry L.: *See—*
Murphree, Francis J.; Warner, Henry L.; and McLeroy, Edward G., Jr., 3,943,482.

Warrick, Philip C., to Performance Packaging, Inc. Self-adhering support. 3,942,654, Cl. 214-10.50R.

Wasel-Nielen, Horst-Dieter; Heymer, Gero; and Wirtz, Peter, to Hoechst Aktiengesellschaft. Process for making condensed aluminum phosphates. 3,943,231, Cl. 423-311.000.

Wassilieff, Alexander; and Shannon, Patrick, to Delta Plastics Limited; and New Zealand Dairy Board. Devices for oestrus detection. 3,942,475, Cl. 119-1.000.

Watanabe, Tsuguhiko. Friction-drive electricity generating method and equipment utilizing the driving wheel of motor cars. 3,943,370, Cl. 290-1.00R.

Waterhouse, George; and Parker, Walter, to Ernest Scragg & Sons Limited. Manufacturing textile yarns. 3,943,222, Cl. 264-147.000.

Waters, David Martin: *See—*
Ellis, Gwynn Pennant; Collins, Ian; Waters, David Martin; and Bays, David Edmund, 3,943,141.

Watson, Christopher Alan: *See—*
Brewster, Arthur Edward; Weir, Donald Adams; Watson, Christopher Alan; George, Roger Geoffrey; and Phillips, Michael James, 3,943,489.

Watson, George Michael: *See—*
Corsi, Gianfranco; and Watson, George Michael, 3,943,341.

Wavin B.V.: *See—*
de Putter, Warner Jan, 3,943,273.

Waxenberger, Erich: *See—*
Scherenberg, Hans O.; van Winsen, Friedrich H.; and Waxenberger, Erich, 3,942,816.

Way, Allan S., to Beckman Instruments, Inc. Apparatus for monitoring the selection of chart recording and wavelength scanning speeds in a radiant energy analyzer. 3,942,893, Cl. 356-96.000.

Weaver, Harold Lloyd, to Pittsburgh Corning Corporation. Mineral wool insulation product. 3,943,032, Cl. 162-152.000.

Weaver, Max A.: *See—*
Maner, Ronald J.; and Weaver, Max A., 3,943,121.

Weelpal, A.G.: *See—*
Buhler, Max A., 3,942,814.

Weiffenbach, Conrad K. Extension for car frame. 3,942,817, Cl. 280-106.00R.

Weigele, Gebhard; and Sulzberger, Johann. Vehicle washing apparatus. 3,942,207, Cl. 15-53.0AB.

Weinberg, Leonard: *See—*
Urkowitz, Harry; Perry, Richard Prather; and Weinberg, Leonard, 3,943,346.

Weindling, Frederik: *See—*
Brienza, Michael J.; and Weindling, Frederik, 3,943,464.

Weingrad, Saul, to Commercial Decal, Inc. Automatic decal transfer method and apparatus therefor. 3,943,023, Cl. 156-230.000.

Weir, Donald Adams: *See—*
Brewster, Arthur Edward; Weir, Donald Adams; Watson, Christopher Alan; George, Roger Geoffrey; and Phillips, Michael James, 3,943,489.

Weiss, Francis: *See—*
Schirmann, Jean-Pierre; Mathais, Henri; Tellier, Pierre; and Weiss, Francis, 3,943,132.
Tellier, Pierre; Schirmann, Jean-Pierre; Mathais, Henri; and Weiss, Francis, 3,943,152.

Welch, Raymond L.: *See—*
Reeve, John R., Jr.; Busse, Ralph; Walker, Elbert; Welch, Raymond L.; Moore, Hermus C., Jr.; and Jones, Milton P., 3,942,593.

Wells, Frank M.; and Black, Gordon J., to Ameron, Inc. Facing ring and pouring chute for vertically cast concrete pipe. 3,942,936, Cl. 425-447.000.

Wells, Franklin B., to United States of America, Army. Explosive composition comprising HMX, RDX, or PETN and a high viscosity nitrocellulose binder plasticized with TMETN. 3,943,017, Cl. 149-19.800.

Wentzel, Roger D., to Planet Corporation. Dump elevator. 3,942,663, Cl. 214-313.000.

Wenzel, Holger: *See—*
Sudmann, Jurgen; and Wenzel, Holger, 3,942,197.

Wenzel, Reinhard; and Reich, Siegfried, to Kleinewefers Industrie-Companie GmbH. Device for adjusting the roller bight of superimposed rollers of a calender. 3,942,434, Cl. 100-168.000.

Werner Corporation: *See—*
Werner, Patrick S.; and Nelson, Frank L., 3,942,554.

Werner, Patrick S.; and Nelson, Frank L., to Werner Corporation. Extendable crane with folding conduit. 3,942,554, Cl. 137-615.000.

Westerdale, Paul A., to Ford Motor Company. Actuating mechanism for imparting oscillatory motion to an output shaft. 3,942,385, Cl. 74-70.000.

Western Geophysical Company of America: *See—*
Dick, Charles W., 3,942,606.
Strange, Booth B., 3,943,483.

Westinghouse Electric Corporation: *See—*
Bennett, Robert R., 3,942,481.
Biddlecomb, Ralph W., 3,943,561.
Frink, Russell E., 3,943,314.
Keever, Joseph M., 3,943,413.
McClelland, Theodore M., III; and Doby, William P., 3,943,498.
Phillips, David C., 3,943,065.
Quidort, Vaughn L., 3,943,446.
Smith, Jack R.; and Reed, Terry J., 3,943,372.
Taylor, Maurice J.; Northrup, Stephen D.; and Aspey, Wayne S., 3,943,315.
Vosicky, Jan, 3,943,504.
Yannone, Robert A.; and Shields, James J., 3,943,371.
Yannone, Robert A.; and Shields, James J., 3,943,373.
Zitelli, William E., 3,943,452.

Westlake, Desmond Maxwell: *See—*
Whiteside, Peter Maurice; and Westlake, Desmond Maxwell, 3,942,769.

Westrex Company Limited: *See—*
Osborn, Leroy Gordon; and Brownlee, George Hunnam, 3,942,883.

Westvaco Corporation: *See—*
Force, Carlton G., 3,943,117.

Wethington, Charles A., to Deering Milliken Research Corporation. Carpet machine. 3,943,027, Cl. 156-435.000.

Wetzel, Bruce W.: *See—*
Tenteris, Ansis U.; Wetzel, Bruce W.; and Mosiniak, Dennis G., 3,942,518.

Whalen, James J. Four riser heating and cooling system. 3,942,585, Cl. 165-50.000.

Wheatley Company: *See—*
Schuller, Ronald A.; and Hogan, Al D., 3,942,551.

Whidden, James R., to General Electric Company. DC to DC Voltage converter. 3,943,428, Cl. 321-15.000.

Whirlpool Corporation: *See—*
Johnson, Robert Edward, 3,942,219.

Whitaker, Richard A., to TRW Inc. Contour formed metal matrix blade plies. 3,942,231, Cl. 29-156.80B.

White, Desmond Deverell, to Dufaylite Developments Limited. Apparatus for lapping a continuous length of honeycomb material. 3,942,300, Cl. 53-59.00R.

Whitehead, Eric, to United Kingdom Atomic Energy Authority. Apparatus for producing granules from powder. 3,942,930, Cl. 425-222.000.

Whiteside, Peter Maurice; and Westlake, Desmond Maxwell. Composting unit. 3,942,769, Cl. 259-81.00R.

Whitman, Jeremy Hugh, to Unwin Electronics Ltd. Electronic intruder alarm apparatus. 3,943,503, Cl. 340-258.00B.

Whittaker, Mack P.; Miller, Frederick C.; and Grindstaff, Lloyd I., to Great Lakes Carbon Corporation. Method for manufacturing high temperature graphite fiber-graphite composites. 3,943,213, Cl. 264-29.000.

Wickstrom, Harry L., to Cook Electric Company. Electrical component container assembly having detachable installable cases. 3,943,412, Cl. 317-99.000.

Wieland, Werner, to Audi NSU Auto Union Aktiengesellschaft; and Wankel GmbH. Housing for circular piston combustion engine of trochoid type and method of producing the same. 3,942,917, Cl. 418-60.000.

Wielang, Joseph A.; and Taylor, Larry L., to United States of America, Energy Research and Development Administration. Cryolite process for the solidification of radioactive wastes. 3,943,062, Cl. 252-301.10W.

Wieser, Rudolf, to Maschinenfabrik Andritz Actiengesellschaft. Hot water pump with cooled sealing housing. 3,942,584, Cl. 165-47.000.

Wijnant, Petrus Leo Clemens; and Ijlstra, Hendrik Jan, to Reactor Centrum Nederland. Gastight passage seal. 3,942,803, Cl. 277-53.000.

Wilder, Cynthia K.: *See*—
Wilder, Joseph R.; Kanbar, Maurice S.; and Wilder, Cynthia K., 3,942,526.

Wilder, Hulen L.: *See*—
Schutze, Henry G.; and Wilder, Hulen L., 3,943,227.

Wilder, Joseph R.; Kanbar, Maurice S.; and Wilder, Cynthia K. Alarm system for intravenous infusion procedure. 3,942,526, Cl. 128-214.00E.

Wilding, Edwin L., to Griffin & Company. Channel belt conveyor. 3,942,626, Cl. 198-192.00R.

Wilding, Gerard Edward. Method of making armature windings for commutator type dynamo-electric machines. 3,942,246, Cl. 29-597.000.

Wilhelm, Alfred: *See*—
Arnold, Gunther; Paal, Gabor; Wilhelm, Alfred; Halfar, Kurt; and Vollmer, Hans Peter, 3,942,996.

Wilke, Richard; and Korthaus, Helmut. Ball race. 3,942,846, Cl. 308-6.00C.

Wilkinson, David B.: *See*—
Ortwerth, Paul J.; Ormand, Lowell W.; and Wilkinson, David B., 3,942,320.

Wilkinson Sword Limited: *See*—
Billington, Richard W.; and Drewett, Robin, 3,943,043.

Williams, Edward George; and LaBombard, Richard George, to Xerox Corporation. Crown die for thread rolling of applicator rolls. 3,942,349, Cl. 72-98.000.

Williamson, David V., to GTE Sylvania Incorporated. On-off switch with time delay. 3,943,375, Cl. 307-141.000.

Willson, Karl Stuart, to Harshaw Chemical Company, The. Microcracked chromium from a bath using an organic sulfur compound. 3,943,040, Cl. 204-51.000.

Wilson, George D.: *See*—
Kovach, Stephen M.; and Wilson, George D., 3,943,053.

Wilson, Richard W., to Motorola, Inc. Method of making a high frequency semiconductor package. 3,943,556, Cl. 357-74.000.

Wilson, Stewart W., to Polaroid Corporation. Methods and apparatus for interactive communications. 3,942,268, Cl. 35-8.00A.

Wing, George S.: *See*—
Bochman, Harry L., Jr.; and Wing, George S., 3,942,570.

Winkler, Bruno; Mangei, Bernd; and Fritz, Dieter, to Naturin-Werk Becker & Co. Process for the production of a dyed edible food casing. 3,943,262, Cl. 426-250.000.

Winrow, Donald, to Ferranti-Packard Limited. Strip module for sign element. 3,942,274, Cl. 40-28.00C.

Winter, Max; Goldman, Irving M.; Gautschi, Fritz; Flament, Ivon; and Stoll, Max, to Firmenich & Cie. Flavoring agent. 3,943,260, Cl. 426-535.000.

Winter, Sybil Betty Anna. Prosthetic device for handicapped persons. 3,942,194, Cl. 3-1.000.

Wirth, Hermann; and Muller, Lothar, to Robert Bosch GmbH. Fluidized powder feed system for rotary distributor of electrostatic coating apparatus. 3,942,721, Cl. 239-15.000.

Wirtz, Peter: *See*—
Wasel-Nielen, Horst-Dieter; Heymer, Gero; and Wirtz, Peter, 3,943,231.

Wise, Lester V., to Federal Business Products, Inc. Two-way mailer. 3,942,714, Cl. 229-73.000.

Wismer, Marco; Schimmel, Karl F.; and Temple, Rodger G., to PPG Industries, Inc. Organic flatting agents and method of preparation. 3,943,080, Cl. 260-20.000.

Witkoff, Robert S., to Alsten Company, The. Jewelry box. 3,942,632, Cl. 206-45.200.

Witonsky, Robert J., to Bio-Medical Sciences, Inc. Time temperature indicator. 3,942,467, Cl. 116-114.00V.

Wittenbrook, Lawrence S.; Timmons, Richard J.; and Fleming, Raymond D., to O. M. Scott & Sons Company, The. Herbicidal compositions containing para-substituted benzenesulfonylureas and salts thereof and methods of employing such compositions. 3,942,973, Cl. 71-103.000.

Wittrock, Henry J., to Kaiser Aluminum & Chemical Corporation. Anodizing pretreatment for nickel plating. 3,943,039, Cl. 204-42.000.

Wohlfarter, Alois, to Maschinenfabrik Andritz AG. Roller arrangement in presses for the removal of water from materials. 3,942,433, Cl. 100-118.000.

Wojcikowski, Richard J., to Dana Corporation. Fluidic sensor. 3,942,556, Cl. 137-804.000.

Wolf, Robert J.: *See*—
Schmalz, Roman; and Wolf, Robert J., 3,942,429.

Wolkovitch, Julian. Joined wing aircraft. 3,942,747, Cl. 244-13.000.

Wolkovitch, Julian. Apparatus for distance control. 3,942,748, Cl. 244-81.000.

Woma-Apparatebau, Wolfgang Maasberg & Co. GmbH: *See*—
Maasberg, Wolfgang, 3,942,214.

Wood, Herbert T.: *See*—
Connors, Malcolm E.; Guazzaloca, William A.; and Wood, Herbert T., 3,942,563.

Wood Industries, Inc.: *See*—
Huffsmith, Charles S., 3,943,502.
Kulka, Robert A.; Bright, Thomas F.; Bruno, Thomas P.; and Huffsmith, Charles S., 3,943,501.

Wood, Leroy J.; and Zych, Edward J., to Haydock Caster Company. Caster sleeve. 3,942,220, Cl. 16-43.000.

Woodard, Boyd Ray. Accordion cover for dump trucks. 3,942,830, Cl. 296-105.000.

Worschech, Rudolf: *See*—
Rath, Walter; and Worschech, Rudolf, 3,942,361.

Wortmann, Joachim: *See*—
Dany, Franz-Josef; Wortmann, Joachim; Munch, Peter; and Braun, Gunther, 3,943,194.

Woweries, Uwe: *See*—
Fitterer, Horst; Woweries, Uwe; Loewenberg, Gustav; and Gaiser, Dieter, 3,942,744.

Wright, Bobby Dean: *See*—
Jenkins, Harry Lee; and Wright, Bobby Dean, 3,942,776.

Wright, David M.: *See*—
Cournoyer, Bernard T.; Wright, David M.; and O'Toole, Jerome M., 3,942,639.

Wright, Gary C. Golfing aid. 3,942,802, Cl. 273-186.00C.

Wu, Souheng, to Du Pont de Nemours, E. I., and Company. Ductile coating composition of an acrylic polymer having reactive sites and an epoxy resin. 3,943,187, Cl. 260-837.00R.

Wurm, Alfred, to Interelectric Aktiengesellschaft. Reusable coffee filter. 3,943,058, Cl. 210-456.000.

Wysocki, Donald C.: *See*—
Bell, Reuben H.; Boardway, Russell M., Jr.; Thomson, Francis D.; and Wysocki, Donald C., 3,943,077.

Xerox Corporation: *See*—
Camphausen, Don L., 3,943,528.
Garlic, Richard A., 3,943,495.
Honjo, Satoru; and Fukushima, Osamu, 3,942,266.
Jones, Lewis O.; and Mermelstein, Robert, 3,942,979.
Maksymiak, John; and Hoffman, Daniel S., 3,942,888.
McCarroll, Alan F., 3,942,887.
Saeva, Franklin D., 3,942,870.
Saeva, Franklin D., 3,942,871.
Saeva, Franklin D., 3,942,872.
Saeva, Franklin D., 3,943,369.
Sato, Masamichi, 3,943,268.
Smith, Richard E.; and Oagley, Jack R., 3,942,474.
Stange, Klaus K., 3,942,785.
Teuscher, Leon A., 3,943,108.
Townsend, Robert H., 3,942,789.
Williams, Edward George; and LaBombard, Richard George, 3,942,349.
Zucker, Edwin, 3,943,049.

Yaginuma, Hiroshi: *See*—
Go, Tadahiro; Yaginuma, Hiroshi; and Inoue, Masaaki, 3,942,997.

Yakovich, Zigmund Yazepovich: *See*—
Berzin, Albert Yazepovich; Buslovich, Solomon Leibovich; Bush, Gunar Yanovich; Gershanov, Gennady Khaimovich; Zhagars, Aivar Alfredovich; Kalognomos, Viktor Ivanovich; Sokolov, Georgy Kondratievich; Chervinsky, Jury Konstantinovich; and Yakovich, Zigmund Yazepovich, 3,943,505.

Yakovleva, Valentina Stepanovna: *See*—
Aristarkhov, Nikolai Nikolaevich; Efimov, Igor Alexandrovich; Zaitsev, Boris Ivanovich; Peters, Iskra Genrikhovna; Tymosh, Boris Severianovich; Filonov, Viktor Sergeevich; Sharov, Alexei Lavrentievich; Shildin, Alexei Ivanovich; Balashova, Galina Stepanovna; Bets, Nikolai Ivanovich; Skvortsov, Stanislav Alexandrovich; Yakovleva, Valentina Stepanovna; Zhuchkov, Ivan Ilich; Gorjunov, Vladimir Sergeevich; Petrov, Vladimir Alexeevich; Kevrolev, Vladimir Petrovich; Rybakov, Valery Nikolaevich; and Tverdovsky, Ninel Dmitrievich, 3,943,365.

Yakushonok, Vladimir Ivanovich: *See*—
Ginzburg, Arkady Savelievich; Gurevich, Genrikh Georgievich; Kirshtein, Generik Khaimovich; Kvasnevsky, Igor Porfirievich; Yakushonok, Vladimir Ivanovich; and Levin, Mikhail Naumovich, 3,942,377.

Yamada, Takahiko; and Sakabe, Tadahiko, to Nippon Electric Company, Limited. Amplitude limiter circuit. 3,943,467, Cl. 333-17.00L.

Yamaguchi, Hiroaki: *See*—
Ando, Noriyoshi; and Yamaguchi, Hiroaki, 3,943,345.

Yamaguchi, Nobuo: *See*—
Hirata, Yasuhiro; Kobayashi, Shoichi; Yamaguchi, Nobuo; Saito, Katshuhiko; Kimura, Mamoru; Iwasa, Yoshitel; Ueda, Masatoshi; and Magara, Hideki, 3,942,291.

Yamaguchi, Takashi; Abe, Yasuo; and Fujita, Yoshio, to Sumitomo Chemical Co., Ltd.; and Dai-Nippon Jachugiku Co., Ltd. Stabilized insecticidal composition. 3,943,239, Cl. 424-43.000.

Yamamichi, Yoshikazu; and Nagao, Jun-ichi, to Dowa-Mining Co., Ltd., The. Process for the removal of sulfur oxide from waste gas. 3,943,230, Cl. 423-242.000.

Yamamoto, Naoki; Sato, Kikuji; and Oi, Tetsu, to Hitachi, Ltd. Semiconductor magnetic head. 3,943,570, Cl. 360-112.000.

Yamamura, Takemi: *See*—
Nakatomi, Shunsuke; Yamamura, Takemi; and Akiba, Yoshikazu, 3,943,186.

Yamasaki, Yasuki: *See*—
Kawaguchi, Minoru; Yamasaki, Yasuki; Shimizu, Hideo; Taoka, Shinichi; and Hayamizu, Yoshio, 3,943,115.
Yamashita, Toshio; Kotake, Toshiro; Hasegawa, Nobuo; Yoshida, Manabu; and Kitamura, Saburo, to Matsushita Electric Industrial Company, Ltd. Photoelectric punched card reading device. 3,943,337, Cl. 235-61.11E.
Yamazaki, Masami: *See*—
Masuda, Isao; and Yamazaki, Masami, 3,943,303.
Yanagawa, Nobuyuki, to Ricoh Company Ltd. Card retrieval system. 3,942,642, Cl. 209-74.00R.
Yanazawa, Hiroshi; Hashimoto, Norikazu; Ashikawa, Mikio; and Douta, Kikuo, to Hitachi, Ltd. Method for controlling the degree of side-etch in thin oxide films by photo-etching process. 3,942,982, Cl. 96-36.000.
Yancey, Leroy D. Unitized theater lighting system main power unit. 3,943,397, Cl. 315-317.000.
Yannone, Robert A.; and Shields, James J., to Westinghouse Electric Corporation. Gas turbine power plant control apparatus including automatic load pickup. 3,943,371, Cl. 290-40.00B.
Yannone, Robert A.; and Shields, James J., to Westinghouse Electric Corporation. Gas turbine power plant control apparatus including a speed/load hold and lock system. 3,943,373, Cl. 290-40.00R.
Yao, Samuel S.: *See*—
Ashton, Larry J.; Abildskov, Dale P.; and Yao, Samuel S., 3,943,020.
Yasumoto, Taizo: *See*—
Kozuka, Ko; Kurioka, Shunichiro; Yasumoto, Taizo; Kobayashi, Shigeru; Kubota, Atsuo; and Otoshi, Nobumasa, 3,943,223.
Yasunaga Engineering Kabushiki Kaisha: *See*—
Shimizu, Hiroshi, 3,942,508.
Yates, David J. C.: *See*—
Kmak, Walter S.; and Yates, David J. C., 3,943,052.
Yato, Tsutomu: *See*—
Takeyama, Hidehiko; and Yato, Tsutomu, 3,942,229.
Yatsuo, Tsutomu: *See*—
Konishi, Nobutake; Yatsuo, Tsutomu; Kamei, Tatsuya; Okamura, Masahiro; and Ogawa, Takuzo, 3,943,550.
Yeakey, Ernest Leon: *See*—
Brennan, Michael E.; and Yeakey, Ernest Leon, 3,943,162.
Yengst, William C., to Science Applications, Inc. Vertical axis fluid driven rotor. 3,942,909, Cl. 416-132.00B.
Yezek, Milton: *See*—
Halik, Joseph John; Pitchon, Esra; Schulman, Marvin; Schwarz, Milton H.; and Yezek, Milton, 3,943,266.
Yoshida, Manabu: *See*—
Yamashita, Toshio; Kotake, Toshiro; Hasegawa, Nobuo; Yoshida, Manabu; and Kitamura, Saburo, 3,943,337.
Yoshizawa, Shigeru; Saito, Nobuo; Mikami, Itsuo; and Kamoshita, Gen-ichi, to Hitachi, Ltd. Split coil type bubble domain driving apparatus. 3,943,497, Cl. 340-174.0TF.
Yoshizawa, Yutaka, to Sanken Electric Company Limited. Process for the fabrication of silicon transistors with high DC current gain. 3,943,014, Cl. 148-187.000.
Yoshizue, Keiro: *See*—
Kajiyama, Shigeo; Kobayashi, Takamitsu; and Yoshizue, Keiro, 3,943,134.
Young, Edgar D.: *See*—
Reed, Fredric L.; and Young, Edgar D., 3,943,288.
Young, Henry T., Jr. Industrial vacuum loading apparatus. 3,942,842, Cl. 302-62.000.
Young, Herbert Thomas, to Procter & Gamble Company, The. Simultaneous refining and dewaxing of crude vegetable oil. 3,943,155, Cl. 260-424.000.
Yupiteru Ongaku Kogyo Kabushikikaisha: *See*—
Suzuki, Tatsuro, 3,943,568.
Zaitsev, Boris Ivanovich: *See*—
Aristarkhov, Nikolai Nikolaevich; Efimov, Igor Alexandrovich; Zaitsev, Boris Ivanovich; Peters, Iskra Genrikhovna; Tymosh, Boris Severianovich; Filonov, Viktor Sergeevich; Sharov, Alexei Lavrentievich; Shildin, Alexei Ivanovich; Balashova, Galina Stepanovna; Bets, Nikolai Ivanovich; Skvortsov, Stanislav Alexandrovich; Yakovleva, Valentina Stepanovna; Zhuchkov, Ivan Ilich; Gorjunov, Vladimir Sergeevich; Petrov, Vladimir Alexeevich; Kevrolev, Vladimir Petrovich; Rybakov, Valery Nikolaevich; and Tverdovsky, Ninel Dmitrievich, 3,943,365.
Zaky, Amin Y.: *See*—
Clark, Robert J.; Davis, Gordon H.; and Zaky, Amin Y., 3,943,298.
Zehntel, Inc.: *See*—
Raymond, Douglas W., 3,943,439.
Zeiders, Glenn W., Jr., to Avco Corporation. Laser mirror. 3,942,880, Cl. 350-310.000.
Zenith Radio Corporation: *See*—
Barber, Howard H.; and Hajduk, Thaddeus J., 3,943,438.
Hendrickson, Melvin C.; and Merrell, Richard G., 3,943,449.
Knitter, Roger W., 3,943,276.
Sedivy, Stanley J., 3,943,399.
Zenkner, Kurt. Method for thermal afterburning of exhaust air from industrial working plants and device for carrying out this method. 3,942,264, Cl. 34-35.000.
Zephyr Industries, Inc.: *See*—
Richilano, Vincent J., 3,942,567.
Zeppenfeld, Kurt: *See*—
Hultsch, Gunther; Zeppenfeld, Kurt; Niedner, Peter; and Ostermeyer, Peter, 3,943,056.
Zerkowitz, Avinoam S.: *See*—
Baldwin, Lawrence W.; and Zerkowitz, Avinoam S., 3,942,409.
Zhagars, Aivar Alfredovich: *See*—
Berzin, Albert Yazepovich; Buslovich, Solomon Leibovich; Bush, Gunar Yanovich; Gershanov, Gennady Khaimovich; Zhagars, Aivar Alfredovich; Kalognomos, Viktor Ivanovich; Sokolov, Georgy Kondratievich; Chervinsky, Jury Konstantinovich; and Yakovich, Zigmund Yazepovich, 3,943,505.
Zhmurov, Valery Pavlovich: *See*—
Tolstov, Jury Georgievich; Skorovarov, Vladimir Efremovich; Grinshtein, Boris Ilich; Stepanova, Valentina Gavrilovna; Bashkatov, Ivan Pavlovich; Vinitsky, Jury Danilovich; Balyasinsky, Valery Ottovich; Zhmurov, Valery Pavlovich; Natalkin, Alexandr Venediktovich; and Lazarev, Grigory Bentsionovich, 3,943,427.
Zhuchkov, Ivan Ilich: *See*—
Aristarkhov, Nikolai Nikolaevich; Efimov, Igor Alexandrovich; Zaitsev, Boris Ivanovich; Peters, Iskra Genrikhovna; Tymosh, Boris Severianovich; Filonov, Viktor Sergeevich; Sharov, Alexei Lavrentievich; Shildin, Alexei Ivanovich; Balashova, Galina Stepanovna; Bets, Nikolai Ivanovich; Skvortsov, Stanislav Alexandrovich; Yakovleva, Valentina Stepanovna; Zhuchkov, Ivan Ilich; Gorjunov, Vladimir Sergeevich; Petrov, Vladimir Alexeevich; Kevrolev, Vladimir Petrovich; Rybakov, Valery Nikolaevich; and Tverdovsky, Ninel Dmitrievich, 3,943,365.
Ziegler, Albert, to Siemens Aktiengesellschaft. Fast breeder reactor. 3,943,036, Cl. 176-18.000.
Zimmer, Peter. Dyestuff applicator for screen printer. 3,942,438, Cl. 101-119.000.
Zimmer, Peter. Dyestuff applicator for screen printer. 3,942,439, Cl. 101-120.000.
Zimmermann, Hans-Georg: *See*—
Becker, Reinhold; Hennecken, Manfred; and Zimmermann, Hans-Georg, 3,942,569.
Zink, Anton, to Daimler-Benz Aktiengesellschaft. Internal combustion engine-preferably of in-line construction, especially for motor vehicles. 3,942,487, Cl. 123-41.790.
Zitelli, William E., to Westinghouse Electric Corporation. Frequency modulation transfer system and method. 3,943,452, Cl. 328-71.000.
Zoecon Corporation: *See*—
Henrick, Clive A.; and Siddall, John B., 3,943,157.
Zucker, Edwin, to Xerox Corporation. Apparatus for separating agglomerated particles within suspensions. 3,943,049, Cl. 204-300.00R.
Zych, Edward J.: *See*—
Wood, Leroy J.; and Zych, Edward J., 3,942,220.
Zykov, Arkady Alexandrovich: *See*—
Gebel, Iosif Davydovich; Zykov, Arkady Alexandrovich; Nefedov, Askold Ivanovich; Parshikov, Viktor Ivanovich; and Khrolenko, Viktor Fedorovich, 3,942,253.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF MARCH, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Burgin, Gerard. Apparatus for dispensing bank notes. Re. 28,731, Cl. 194-4.00G.

Cohen, Elie. Method of making a cast guide for folding flexible sheets. Re. 28,733, Cl. 264-219.000.

Finnstrand, Harald, to International Telephone & Telegraph Corporation. Stove and burner assembly. Re. 28,730, Cl. 126-43.000.

Inoue, Kiyoshi. EDM power supply for generating self-adaptive discharge pulses. Re. 28,734, Cl. 219-69.00P.

International Telephone & Telegraph Corporation: *See*—
Finnstrand, Harald, Re. 28,730.

NJM, Inc.: *See*—
von Hofe, George W., Re. 28,732.

von Hofe, George W., to NJM, Inc. Method of and apparatus for printing and feeding labels in a continuous web, and for verifying and cutting individual labels therefrom for application to articles. Re. 28,732, Cl. 156-64.000.

LIST OF PLANT PATENTEES

Jackson & Perkins Co.: *See*—
Warriner, William A. 3,837.
Warriner, William A. 3,838.

Lecoufle, Maurice, and M. Vacherot, to Les Petits-Fils et Fils de Vacherot & Lecoufle. Orchard plant (fugue), 3,836, 3–9–76, Cl. 68.

Les Petits-Fils et Fils de Vacherot & Lecoufle: *See*—
Lecoufle, Maurice, and Vacherot. 3,836.

San Leandro Nursery Co.: *See*—
Umeda, George Y., and Shinoda. 3,840.

Shinoda, Daniel S.: *See*—
Umeda, George Y., and Shinoda. 3,840.

Swane Bros. Pty., Ltd.: *See*—
Swane, Edgar N. 3,839.

Swane, Edgar N., to Swane Bros. Pty., Ltd. Cypress tree. 3,839, 3–9–76, Cl. 50.

Umeda, George Y., and D. S. Shinoda, to San Leandro Nursery Co. Rose plant (chibi). 3,840, 3–9–76, Cl. 28.

Vacherot, Michel: *See*—
Lecoufle, Maurice, and Vacherot. 3,836.

Warriner, William A., to Jackson & Perkins Co. Rose plant. 3,837, 3–9–76, Cl. 5.

Warriner, William A., to Jackson & Perkins Co. Rose plant. 3,838, 3–9–76, Cl. 20.

LIST OF DESIGN PATENTEES

Adams, John F. Support stand for a blanket. 239,072, 3–9–76, Cl. D6—85.

Adler, David T. Flexible instrument holder and positioner. 239,131, 3–9–76, Cl. D54—13.

Ahlbin, Fred E., and W. G. Hembling, to The Scott & Fetzer Co. Cable capstan casing. 239,085, 3–9–76, Cl. D8—216.

Ajax Hardware Corp.: *See*—
Read, George D., McCain, and Scott. 239,068.
Read, George D., McCain, and Scott. 239,069.

Altenheiner, Erwin, and J. Hornschu, to Carl Zeiss-Stiftung. Binoculars. 29,136, 3–9–76, Cl. D57—1.

Appleman, Donald T., to The Procter & Gamble Co. Paper toweling. 239,137, 3–9–76, Cl. D59—2.

Arluck, Elmer, and M. S. Jenner, to Thermo-Mold Medical Products, Inc. Orthopedic brace. 239,142, 3–9–76, Cl. D83—1.

Arluck, Elmer, and M. S. Jenner, to Thermo-Mold Medical Products, Inc. Orthopedic arm support. 239,143, 3–9–76, Cl. D83—1.

Ashcraft, Walter C. Cardiac and thoracic surgery instrument. 239,141, 3–9–76, Cl. D83—12.

Baer, Sheldon. Motor home or the like. 239,101, 3–9–76, Cl. D12—100.

Balia, Albert. Calibrated ruler. 239,093, 3–9–76, Cl. D10—71.

Bellmore-Johnson Tool Co.: *See*—
Findlay, David. 239,113.

Berkley & Co., Inc.: *See*—
Hurney, Charles E. 239,078.

Berliner, Wally: *See*—
Piatti, Omar, and Berliner. 239,086.

Bialaszewski, Joseph W. A. Type font. 239,140, 3–9–76, Cl. D64—12.

Bic Pen Corp.: *See*—
Marynissen, William E. 239,112.

Blasingame, Thomas W. Unit frame for demountable load bodies. 239,100, 3–9–76, Cl. D12—96.

Bolter, Bernard J.: *See*—
Heyer, Robert E., and Bolter. 239,120.

Branson, Robert L. Heat dissipator. 239,118, 3–9–76, Cl. D26—1.

Burns, Richard H.: *See*—
Graff, David F., Burns, and Walthour. 239,075.

Butler, John E. Snowshoe. 239,124, 3–9–76, Cl. D34—14.

Callebaut, Raymond J.: *See*—
Hafner, Joseph C., and Callebaut. 239,088.

Candiliotis, Gerassimos C., to Uniroyal, Inc. Pneumatic tire tread and buttress. 239,103, 3–9–76, Cl. D12—147.

Caprile, Marilyn: *See*—
Caprile, Robert, and Marilyn Caprile. 239,111.

Caprile, Robert, and Marilyn Caprile. Envelope. 239,111, 3–9–76, Cl. D19—3.

Castell, Ronald G., to GTE Sylvania Inc. Clock. 239,090, 3–9–76, Cl. D10—6.

Covert, Douglas C., to Xerox Corp. Semiconductor educational board. 239,106, 3–9–76, Cl. D19—62.

Covert Douglas C., to Xerox Corp. Parallel RL/RC circuits educational board. 239,107, 3–9–76, Cl. D19—62.

Covert, Douglas C., to Xerox Corp. RLC circuits educational board. 239,108, 3–9–76, Cl. D19—62.

Covert, Douglas C., to Xerox Corp. Series RL and RC circuits educational board. 239,109, 3–9–76, Cl. D19—62.

Covert, Douglas C., to Xerox Corp. Educational device for learning about rectifiers and filters. 239,110, 3–9–76, Cl. D19—62.

Cronin, Harry J. Spanner wrench. 239,081, 3–9–76, Cl. D8—27.

Crum, Gerald W., R. A. Liss, A. B. Reighard, and S. Z. Tamny, to Nordson Corp. Adhesive dispenser. 239,132, 3–9–76, Cl. D55—1.

D'Elia, Ronald. Plural desk unit. 239,061, 3–9–76, Cl. D6—167.

Dorsey, Jack C. Housing for remote engine starter. 239,119, 3–9–76, Cl. D26—13.

Duffy, Donald D. Wheeled luggage carrier. 239,094, 3–9–76, Cl. D12—31.

Dunmire, Charles W., to Johns-Manville Corp. Transformer pad or the like. 239,133, 3–9–76, Cl. D55—1.

Dybala, Raymond, to Sunbeam Corp. Casing for a wall clock, wall plaque or similar article. 239,092, 3–9–76, Cl. D10—17.

Eldon Industries, Inc.: *See*—
Foster, Harold S., and Ortega. 239,077.

Findlay, David, to Bellmore-Johnson Tool Co. Flare gun, 239,113, 3–9–76, Cl. D22—1.

Foster, Harold S., and C. J. Ortega, to Eldon Industries, Inc. Soldering iron. 239,077, 3–9–76, Cl. D8—30.

GTE Sylvania Inc.: *See*—
Casteel, Ronald G. 239,090.

Gardenhour, Eugene C., and H. S. Robins, to Walter Kidde & Co., Inc. Telescopic cantilevered crane boom. 239,096, 3–9–76, Cl. D12—34.

Gardenhour, Eugene C., and H. S. Robins, to Walter Kidde & Co., Inc. Telescopic crane boom section. 239,097, 3–9–76, Cl. D12—60.

George, Robert F. Furniture base or similar article. 239,073, 3–9–76, Cl. D6—196.

Gindi, Joseph M. Display hanger. 239,089, 3–9–76, Cl. D6—248.

Graff, David F., R. H. Burns, and W. J. Walthour, to Hobart Corp. Microwave oven. 239,075, 3–9–76, Cl. D7—128.

Gray, Irma L. Sewing tree. 239,070, 3–9–76, Cl. D6—28.

Hafner, Joseph C., and R. J. Callebaut. Juvenile car seat. 239,088, 3–9–76, Cl. D6—7.

Harris, Frederick J., to Olin Corp. Sleeve for a masonry anchor. 239,084, 3–9–76, Cl. D8—272.

Hattenbach, Ray P., to Phillips Petroleum Co. Lid for load on industrial platform pallet or the like. 239,095, 3–9–76, Cl. D12—53.

Hembling, William G.: *See*—
Ahlbin, Fred E., and Hembling. 239,085.

Heyer, Robert E., and B. J. Bolter, to E. R. Squibb & Sons, Inc. Container for radioisotope generator. 239,120, 3–9–76, Cl. D32—1.

Hobart Corp.: *See*—
Graff, David F., Burns, and Walthour. 239,075.

Hornschu, Joachim: *See*—
Altenheiner, Erwin, and Hornschu. 239,136.
Hurney, Charles F., to Berkley & Co., Inc. Stationary rope lock. 239,078. 3–9–76, Cl. D8—108.
Jenner, Myron S.: *See*—
Arluck, Elmer, and Jenner. 239,142.
Arluck, Elmer, and Jenner. 239,143.
Johns-Manville Corp.: *See*—
Dunmire, Charles W. 239,133.
Johnson, W. Grant, to W. Grant Johnson. Oral suction device. 239,116. 3–9–76, Cl. D24—1.
Kabushiki Kaisha Murakoshi Seira Seisakusho: *See*—
Murakoshi, Kazuo. 239,076.
Kabushiki Kaisha Seikosha Seisakusho: *See*—
Saito, Hisashi. 239,079.
Karaki, Masahiro, to Matsushita Electric Industrial Co., Ltd. Flash unit. 239,139. 3–9–76, Cl. D61—1.
Kawamura, Ken, Katsuhiko Makino, Shinzo Murakami, and Hironosuke Koda, to Matsushita Electric Industrial Co., Ltd. Radio receiver. 239,134. 3–9–76, Cl. D56—4.
Kidde, Walter, & Co., Inc.: *See*—
Gardenhour, Eugene C., and Robins. 239,096
Gardenhour, Eugene C., and Robins. 239,097.
Koda, Hironosuke: *See*—
Kawamura, Ken, Makino, Murakami, and Koda. 239,134.
Kraasl, Gerald J. Range indexing telescopic sight mount. 239,114. 3–9–76, Cl. D22—8.
Liss, Robert A.: *See*—
Crum, Gerald W., Liss, Reighard, and Tamny. 239,132.
Loven, Judith C. Hobbyhorse head. 239,126, 3–9–76, Cl. D34—15.
Madewell Products, Inc.: *See*—
Travaglio, Dalny. 239,121.
Makino, Katsuhiko: *See*—
Kawamura, Ken, Makino, Murakami, and Koda. 239,134.
Malkin, Robert S. Plant balling device. 239,128, 3–9–76, Cl. D35—1.
Manning, Joseph H. Mobile home tie-down tensioning bracket. 239,082. 3–9–76, Cl. D8—229.
Martinet, Roland, to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes. Tire. 239,102. 3–9–76, Cl. D12—143.
Marynissen, William E., to Bic Pen Corp. Marking instrument. 239,112. 3–9–76, Cl. D19—45
Matsushita Electric Industrial Co., Ltd.: *See*—
Karaki, Masahiro. 239,139.
Kawamura, Ken, Makino, Murakami, and Koda. 239,134.
Sugihara, Osamu, Ueda, Ohta, Terauchi, Sugiwaka, and Yoshioka. 239,135.
McCain, Lawrence G.: *See*—
Read, George D., McCain, and Scott. 239,068.
Read, George D., McCain, and Scott. 239,069.
McNair, Samuel L., and H. J. Talge, to Henry J. Talge. Hand held shower spray head. 239,115, 3–9–76, Cl. D23—35.
Mills, Leroy. Lock. 239,083, 3–9–76, Cl. D8—108.
Mitteiman, Alan J. Vehicle bumper panel. 239,104, 3–9–76, Cl. D12—169.
Morse Electro Products Corp.: *See*—
Robson, Arthur. 239,071.
Murakami, Shinzo: *See*—
Kawamura, Ken, Makino, Murakami, and Koda. 239,134.
Murakoshi, Kazuo, to Kabushiki Kaisha Murakoshi Seira Seisakusho. Drive-in bolt. 239,076, 3–9–76, Cl. D8—272.
Nordson Corp.: *See*—
Crum, Gerald W., Liss, Reighard, and Tamny. 239,132.
North American Philips Corp.: *See*—
Rakocy, William J. 239,074.
Ohta, Fumiharu: *See*—
Sugihara, Osamu, Ueda, Ohta, Terauchi, Sugiwaka, and Yoshioka. 239,135.
Olin Corp.: *See*—
Harris, Frederick J. 239,084.
Ortega, Charles J.: *See*—
Foster, Harold S., and Ortega. 239,077.
Pacific Metals Products Co.: *See*—
Stevenson, Richard L. 239,080.
Phillips Petroleum Co.: *See*—
Hattenbach, Ray P. 239,095.
Smith, Ernest L. 239,087.
Platti, Omar, and Wally Berliner, to Waldes Kohinoor, Inc. Flexible high-shoulder retaining ring. 239,086, 3–9–76, Cl. D8—266.
Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes: *See*—
Martinet, Roland. 239,102.
Popplewell, Frank W., to Dunlop Ltd. Shuttlecock. 239,122, 3–9–76, Cl. D34—5.
Powers, James R., to Tomy Corp. Toy vehicle. 239,127, 3–9–76, Cl. D34—15.
Procter & Gamble Co., The: *See*—
Appleman, Donald T. 239,137.
Rakocy, William J., to North American Philips Corp. Electric coffee maker. 239,074, 3–9–76, Cl. D7—62.
Read, George D., L. G. McCain, and E. W. Scott, to Ajax Hardware Corp. Hook. 239,068, 3–9–76, Cl. D6—102.
Read, George D., L. G. McCain, and E. W. Scott, to Ajax Hardware Corp. Recessed toilet tissue holder. 239,069, 3–9–76, Cl. D6—97.
Reed Candle Co.: *See*—
Reed, Peter N. 239,130.
Reed, Peter N., to Reed Candle Co. Candle glass. 239,130, 3–9–76, Cl. D48—2.
Reed, Robert L., and C. L. Spencer. Three legged multi-height golf ball tee. 239,123, 3–9–76, Cl. D34—5.
Reighard, Alan B.: *See*—
Crum, Gerald W., Liss, Reighard, and Tamny. 239,132.
Robertson, Donald A., and C. A. Smith, to Xerox Corp. Xerographic copier. 239,138, 3–9–76, Cl. D61—1.
Robins, Herbert S.: *See*—
Gardenhour, Eugene C., and Robins. 239,096.
Gardenhour, Eugene C., and Robins. 239,097.
Robinson, Richard T. Submarine. 239,098, 3–9–76, Cl. D12—65.
Robson, Arthur, to Morse Electro Products Corp. Combination cabinet and stand. 239,071, 3–9–76, Cl. D6—27.
Rosenberger, Hugo. Planter. 239,129, 3–9–76, Cl. D35—3.
Saito, Hisashi, to Kabushiki Kaisha Saikosha Seisakusho. Combination lock for bicycles or the like. 239,079, 3–9–76, Cl. D8—114.
Sayers, Bernard. Balloon. 239,099, 3–9–76, Cl. D12—71.
Scott, Edward W.: *See*—
Read, George D. McCain, and Scott. 239,068.
Read, George D., McCain, and Scott. 239,069.
Scott & Fetzer Co., The: *See*—
Ahlbin, Fred E., and Hembling. 239,085.
Sgombick, John E., to Xerox Corp. Storage unit. 239,063, 3–9–76, Cl. D6—166.
Sgombick, John E., to Xerox Corp. Storage unit. 239,064, 3–9–76, Cl. D6—166.
Sgombick, John E., to Xerox Corp. Storage unit. 239,065, 3–9–76, Cl. D6—166.
Sgombick, John E., to Xerox Corp. Storage unit. 239,066, 3–9–76, Cl. D6—166.
Sgombick, John E., to Xerox Corp. Storage unit. 239,067, 3–9–76, Cl. D6—166.
Siroonian, John, to Western U.S. Industries. Vehicle wheel. 239,105, 3–9–76, Cl. D12—205.
Sklaroff, William B., to Tiffany Industries, Inc. Credenza. 239,062, 3–9–76, Cl. D6—166.
Spencer, Cyril L.: *See*—
Reed, Robert L., and Spencer. 239,123.
Smith, Craig A.: *See*—
Robertson, Donald A., and Smith. 239,138.
Smith, Ernest L., to Phillips Petroleum Co. Gable top packaging container or the like. 239,087, 3–9–76, Cl. D9—180.
Squibb, E. R., & Sons, Inc.: *See*—
Heyer, Robert E., and Bolter. 239,120.
Stevenson, Richard L., to Pacific Metals Products Co. General purpose sheers. 239,080, 3–9–76, Cl. D8—5.
Sugihara, Osamu, Kazuhiro Ueda, Fumiharu Ohta, Makoto Terauchi, Takayo Sugiwaka, and Mitsuo Yoshioka, to Matsushita Electric Industrial Co., Ltd. Television receiver. 239,135, 3–9–76, Cl. D56—4.
Sugiwaka, Takayo: *See*—
Sugihara, Osamu, Ueda, Ohta, Terauchi, Sugiwaka, and Yoshioka. 239,135.
Sunbeam Corp.: *See*—
Dybala, Raymond. 239,092.
Talge, Henry J.: *See*—
McNair, Samuel L., and Talge. 239,115.
Tamny, Simon Z.: *See*—
Crum, Gerald W., Liss, Reighard, and Tamny. 239,132.
Teledyne, Inc.: *See*—
Tidus, David B. 239,117.
Terauchi, Makoto: *See*—
Sugihara, Osamu, Ueda, Ohta, Terauchi, Sugiwaka, and Yoshioka. 239,135.
Thermo-Mold Medical Products, Inc.: *See*—
Arluck, Elmer, and Jenner. 239,142.
Arluck, Elmer, and Jenner. 239,143.
Tidus, David B., to Teledyne, Inc. Loran receiver. 239,117, 3–9–76, Cl. D26—14.
Tiffany Industries, Inc.: *See*—
Sklaroff, William B. 239,062.
Tomy Corp.: *See*—
Powers, James R. 239,127.
Toyoshima, Seiji. Clock. 239,091, 3–9–76, Cl. D10—15.
Travaglio, Dalny, to Madewell Products, Inc. Tennis ball retriever. 239,121. 3–9–76, Cl. D34—5.
Ueda, Kazuhiro: *See*—
Sugihara, Osamu, Ueda, Ohta, Terauchi, Sugiwaka, and Yoshioka. 239,135.
Uniroyal, Inc.: *See*—
Candiliotis, Gerassimos C. 239,103.
U.S. Philips Corp.: *See*—
Van Lelyveld, Maarten W. 239,144.
Van Lelyveld, Maarten W., to U.S. Philips Corp. Dry shaver or similar article. 239,144, 3–9–76, Cl. D95—3.
Vota, Marcel. Toy wheel barrow for children. 239,125, 3–9–76, Cl. D34—15.
Waldes Kohinoor, Inc.: *See*—
Platti, Omar, and Berliner. 239,086.
Walthour, William J.: *See*—
Graff, David F., Burns, and Walthour. 239,075.
Western U.S. Industries: *See*—
Siroonian, John. 239,105.
Xerox Corp.: *See*—
Covert, Douglas C. 239,106–110.
Robertson, Donald A., and Smith. 239,138.
Sgombick, John E. 239,063–067.
Youshioka, Mitsu: *See*—
Sugihara, Osamu, Ueda, Ohta, Terauchi, Sugiwaka, and Yoshioka. 239,135.
Zeiss-Stiftung, Carl: *See*—
Altenheiner, Erwin, and Hornschu. 239,136.

CLASSIFICATION OF PATENTS

ISSUED MARCH 9, 1976

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
145 3,942,191
152R 3,942,192
167 3,942,193

CLASS 3
1 3,942,194
3,942,195

CLASS 4
112 3,942,196
149 3,942,197
172 3,942,198
185R 3,942,199
213 3,942,200
252R 3,942,201

CLASS 5
34ER 3,942,202

CLASS 8
26 3,942,946
93 3,942,947
125 3,942,948
3,942,949
173 3,942,950

CLASS 9
8P 3,942,204
8R 3,942,203
307 3,942,205

CLASS 12
142R 3,942,206

CLASS 15
53AB 3,942,207
104.01R 3,942,208
118 3,942,209
179 3,942,210
183 3,942,211
250.42 3,942,212
302 3,942,213
320 3,942,214
3,942,215
321 3,942,217
331 3,942,216
340 3,942,218
383 3,942,219

CLASS 16
43 3,942,220

CLASS 17
42 3,942,221
45 3,942,222

CLASS 19
258 3,942,223

CLASS 23
252R 3,942,951
259 3,942,952
277C 3,942,953

CLASS 24
90B 3,942,224
94 3,942,225
208A 3,942,226
230A 3,942,227
255SL 3,942,228

CLASS 29
95R 3,942,229
132 3,942,230
156.8B 3,942,231
157C 3,942,232
182.7 3,942,954
183.5 3,942,955
200R 3,942,233
201R 3,942,234
208D 3,942,235
208R 3,942,236
417 3,942,237
433 3,942,238
462 3,942,239
512 3,942,240
571 3,942,241
573 3,942,242
590 3,942,243
3,942,244
591 3,942,245
597 3,942,246

CLASS 30
6.5 3,942,247
97 3,942,248
160 3,942,249
241 3,942,250
376 3,942,251

CLASS 33
75R 3,942,252
178D 3,942,253
179.5R 3,942,254
202 3,942,255
257 3,942,256
361 3,942,257
3,942,258

CLASS 34
1 3,942,259
4 3,942,260
5 3,942,261
15 3,942,262
20 3,942,263
35 3,942,264
45 3,942,265
122 3,942,266
236 3,942,267

CLASS 35
8A 3,942,268
9A 3,942,269
12N 3,942,270

CLASS 37
117.5 3,942,271

CLASS 38
102.91 3,942,272

CLASS 40
1.5 3,942,273
28C 3,942,274
31 3,942,275
359 3,942,276

CLASS 42
25 3,942,277
70F 3,942,278
76R 3,942,279

CLASS 43
42.14 3,942,280
42.39 3,942,281
44.2 3,942,282

CLASS 44
1R 3,942,956

CLASS 46
154 3,942,283
161 3,942,284
201 3,942,285

CLASS 48
196R 3,942,957
213 3,942,958

CLASS 49
141 3,942,286

CLASS 51
5D 3,942,287
76R 3,942,288
241VS 3,942,289
295 3,942,959

CLASS 52
57 3,942,290
169R 3,942,291
204 3,942,292
232 3,942,293
259 3,942,294
288 3,942,295
296 3,942,296
637 3,942,297

CLASS 53
13 3,942,298
21R 3,942,299
59R 3,942,300
110 3,942,301
138R 3,942,302
159 3,942,303
182R 3,942,304

CLASS 54
2 3,942,305
80 3,942,306

CLASS 55
74 3,942,960
203 3,942,961
302 3,942,962
380 3,942,963
494 3,942,964

CLASS 56
13.9 3,942,307
16.8 3,942,308

CLASS 57
9 3,942,309
24 3,942,310
34HS 3,942,312
34R 3,942,311
77.4 3,942,313
135 3,942,314
164 3,942,315

CLASS 58
23R 3,942,316
59 3,942,317
85.5 3,942,318

CLASS 60
253 3,942,319
270S 3,942,320
289 3,942,321
371 3,942,322
413 3,942,323
517 3,942,324
533 3,942,325
563 3,942,326
665 3,942,327

CLASS 61
25 3,942,328
45B 3,942,329

CLASS 62
5 3,942,330
45 3,942,331
217 3,942,332
3,942,333
266 3,942,334

CLASS 64
21 3,942,335
23 3,942,336
29 3,942,337
30D 3,942,338

CLASS 65
4B 3,942,965
33 3,942,966
114 3,942,967
134 3,942,968

CLASS 66
75R 3,942,339

CLASS 68
3R 3,942,340
17R 3,942,341
205R 3,942,342
3,942,343

CLASS 70
70 3,942,344
276 3,942,345
366 3,942,346
395 3,942,347

CLASS 71
5 3,942,969
12 3,942,970
87 3,942,971
88 3,942,972
103 3,942,973

CLASS 72
71 3,942,348
98 3,942,349
228 3,942,350
271 3,942,351
275 3,942,352
354 3,942,353
448 3,942,354

CLASS 73
15R 3,942,355
19 3,942,356
23 3,942,357
35 3,942,359
61R 3,942,360
67.7 3,942,358
3,942,361
88R 3,942,362
115 3,942,364
116 3,942,363
3,942,365
119A 3,942,366
134 3,942,367
141R 3,942,368
143 3,942,369
146 3,942,370
147 3,942,371
148 3,942,372
151 3,942,373
155 3,942,374
168 3,942,375
180 3,942,376
194EM 3,942,377
204 3,942,378
311 3,942,379
362.3 3,942,380
398AR 3,942,382
398RR 3,942,381
421A 3,942,388
483 3,942,383

CLASS 74
60 3,942,384
70 3,942,385
333 3,942,386
417 3,942,387
458 3,942,389
529 3,942,390
552 3,942,391
750R 3,942,392
866 3,942,393

CLASS 75
3 3,942,974
10R 3,942,975
23 3,942,976
30 3,942,977
51 3,942,978

CLASS 76
84 3,942,394

CLASS 81
3.05 3,942,396
3.2 3,942,395
9.5A 3,942,397
56 3,942,398

CLASS 83
4 3,942,399
13 3,942,400
19 3,942,401
418 3,942,402

CLASS 84
251 3,942,403
484 3,942,404

CLASS 85
46 3,942,405
47 3,942,406
71 3,942,407

CLASS 86
19 3,942,408

CLASS 89
1.814 3,942,409
139 3,942,410

CLASS 90
11A 3,942,411

CLASS 91
411R 3,942,412
412 3,942,413
487 3,942,414

CLASS 92
118 3,942,415

CLASS 93
32 3,942,416
49M 3,942,417
80 3,942,418

CLASS 96
1SD 3,942,979
1.5 3,942,980
36 3,942,981
3,942,982
48PD 3,942,983
60BF 3,942,984
66.3 3,942,985
68 3,942,986
73 3,942,987
90R 3,942,988

CLASS 98
40A 3,942,419
115LH 3,942,421
115SB 3,942,420
116 3,942,422

CLASS 99
277.1 3,942,423
313 3,942,424
467 3,942,425
473 3,942,426
571 3,942,427
640 3,942,428

CLASS 100
26 3,942,429
52 3,942,430
53 3,942,431
3,942,432
118 3,942,433
168 3,942,434

CLASS 101
44 3,942,435
93.43 3,942,436
111 3,942,437
119 3,942,438
120 3,942,439
401.1 3,942,440

CLASS 102
34.1 3,942,441
37.8 3,942,442
49.3 3,942,443
70R 3,942,444
3,942,445
70.2P 3,942,446
3,942,447

CLASS 104
11 3,942,448
107 3,942,449
121 3,942,450
176 3,942,451
229 3,942,452

CLASS 105
265 3,942,453
472 3,942,454

CLASS 106
14 3,942,989
40R 3,942,990
52 3,942,991
3,942,992
53 3,942,993
89 3,942,994
124 3,942,995
176 3,942,996
285 3,942,997
298 3,942,998
300 3,942,999

CLASS 110
8C 3,942,455

CLASS 114
16E 3,942,456
61 3,942,457
71 3,942,458
74R 3,942,459
77R 3,942,460
144C 3,942,461
165 3,942,462

CLASS 115
11 3,942,463
12R 3,942,464
28A 3,942,465
34R 3,942,466

CLASS 116
114V 3,942,467
142FP 3,942,468

CLASS 118
48 3,942,469
310 3,942,470
426 3,942,471
504 3,942,472
610 3,942,473
637 3,942,474

CLASS 119
1 3,942,475
21 3,942,476
29 3,942,477
51.12 3,942,478
52R 3,942,479
156 3,942,480

CLASS 122
32 3,942,481
3,942,482
448R 3,942,483

CLASS 123
8.41 3,942,484
32AE 3,942,485
41.12 3,942,486
41.79 3,942,487
55AA 3,942,488
73PP 3,942,489
90.4 3,942,490
117R 3,942,491
3,942,492
119D 3,942,493
119R 3,942,494
122AC 3,942,495
139AW 3,942,496
3,942,497
140R 3,942,498
141 3,942,499
3,942,500
148CC 3,942,501
179K 3,942,505
195R 3,942,502
196AB 3,942,503
198DB 3,942,504

CLASS 124
24R 3,942,506
30A 3,942,507

CLASS 125
16R 3,942,508

CLASS 126
43 Re.28,730
121 3,942,509
248 3,942,511
263 3,942,510

CLASS 127
33 3,943,000

CLASS 128
1R 3,942,512
2F 3,942,514
2R 3,942,513
3,942,515
2.1B 3,942,516
2.1E 3,942,517
24A 3,942,519
24R 3,942,518
24.1 3,942,520
85 3,942,521
90 3,942,522
132D 3,942,523
147 3,942,524
165 3,942,525
214E 3,942,526
214R 3,942,527
3,942,528
272 3,942,529
303.15 3,942,530
328 3,942,531
335.5 3,942,532
417 3,942,533
419PG 3,942,534
419PS 3,942,535
419D 3,942,536

CLASS 131
17R 3,942,537

CLASS 132
11R 3,942,538
79E 3,942,539
85 3,942,540

CLASS 133
1R 3,942,541
3,942,542
2 3,942,543
4R 3,942,544

CLASS 134
46 3,942,545

CLASS 136
6LN 3,943,001
33 3,943,002
89 3,943,003
100M 3,943,004
120FC 3,943,005
3,943,006
170 3,943,007
177 3,943,008
3,943,009

CLASS 137
93 3,942,546

102 3,942,547
110 3,942,548
207 3,942,549
493 3,942,550
514 3,942,551
517 3,942,552
599 3,942,553
615 3,942,554
625.2 3,942,555
804 3,942,556
810 3,942,557
826 3,942,558
831 3,942,559

CLASS 138

89 3,942,560

CLASS 141

67 3,942,561
83 3,942,562
88 3,942,563
348 3,942,564

CLASS 144

144R 3,942,566
311 3,942,565

CLASS 145

29R 3,942,567

CLASS 148

31.5 3,943,010
34 3,943,011
105 3,943,012
187 3,943,013
3,943,014
188 3,943,015
189 3,943,016

CLASS 149

19.8 3,943,017

CLASS 150

1 3,942,568
3,942,569

CLASS 151

8 3,942,570

CLASS 152

158 3,942,571
208 3,942,572
330L 3,942,573
362R 3,942,574

CLASS 156

64 Re.28,732
79 3,943,018
99 3,943,019
156 3,943,020
180 3,943,021
211 3,943,022
230 3,943,023
380 3,943,024
3,943,025
410 3,943,026
435 3,943,027
3,943,028
443 3,943,029
446 3,943,030
583 3,943,031

CLASS 157

1.26 3,942,575

CLASS 160

104 3,942,576

CLASS 162

152 3,943,032
232 3,943,033
3,943,034
272 3,943,035

CLASS 164

4 3,942,577
54 3,942,578
3,942,579
55 3,942,580
60 3,942,581
76 3,942,582
246 3,942,583

CLASS 165

47 3,942,584
50 3,942,585
105 3,942,586
129 3,942,587
3,942,588
157 3,942,589

CLASS 171

5 3,942,590

CLASS 172

371 3,942,591

CLASS 173

23 3,942,593
157 3,942,592

CLASS 174

23R 3,943,271
48 3,943,272
84S 3,943,273

CLASS 175

27 3,942,594
99 3,942,595
227 3,942,596

CLASS 176

18 3,943,036
30 3,943,037

CLASS 177

230 3,942,597

CLASS 178

6.6DC 3,943,274
6.6R 3,943,275
3,943,276
6.8 3,943,277
3,943,278
7.3D 3,943,279
7.5D 3,943,281
7.5R 3,943,280
7.9I 3,943,282
58R 3,943,283
3,943,284
67 3,943,285

CLASS 179

1GQ 3,943,286
3,943,287
1SA 3,943,295
2TC 3,943,288
6C 3,943,290
6D 3,943,289
6E 3,943,291
6R 3,943,292
15AN 3,943,296
15BT 3,943,293
3,943,294
18AG 3,943,299
18FH 3,943,298
18GF 3,943,297
90B 3,943,300
99 3,943,301
100.4C 3,943,302
100.4D 3,943,303
105 3,943,304
175.3R 3,943,305

CLASS 180

6.5 3,942,598
64A 3,942,599
3,942,600
82A 3,942,602
82R 3,942,601
92 3,942,603
103R 3,942,604
114 3,942,605

CLASS 181

122 3,942,606

CLASS 187

77 3,942,607

CLASS 188

1D 3,942,608
24 3,942,609
71.4 3,942,610
73.3 3,942,611
73.6 3,942,612
196BA 3,942,827
296 3,942,613

CLASS 191

12.2R 3,943,306

CLASS 192

4A 3,942,614
6A 3,942,615
45 3,942,616
111A 3,942,617

CLASS 193

35R 3,942,618

CLASS 194

4G Re.28,731

CLASS 195

28R 3,943,038

CLASS 197

1R 3,942,619
3,942,620
127R 3,942,622
181 3,942,621

CLASS 198

32 3,942,623
37 3,942,624
3,942,625
192R 3,942,626
219 3,942,627
220DA 3,942,628
254 3,942,629

CLASS 200

5E 3,943,307
18 3,943,308
44 3,943,309
51R 3,943,310
61.13 3,943,311
61.58R 3,943,312
61.62 3,943,313
148A 3,943,314
148B 3,943,315
337 3,943,316

CLASS 204

42 3,943,039
51 3,943,040
56R 3,943,041
95 3,943,042
146 3,943,043
149 3,943,044
159.22 3,943,045
159.23 3,943,046
192 3,943,047
290R 3,943,048
300R 3,943,049

CLASS 206

1.5 3,942,630
44.12 3,942,631
45.2 3,942,632
107 3,942,633
210 3,942,634
338 3,942,635
349 3,942,636
389 3,942,637
416 3,942,638
444 3,942,639
469 3,942,640
534 3,942,641

CLASS 208

65 3,943,050
111 3,943,051
140 3,943,052
143 3,943,053

CLASS 209

74R 3,942,642
81A 3,942,643
86 3,942,644
104 3,942,645
392 3,943,054

CLASS 210

2 3,943,055
78 3,943,056
321R 3,943,057
456 3,943,058

CLASS 211

5 3,942,646
144 3,942,647

CLASS 213

75TC 3,942,648

CLASS 214

1BC 3,942,650
1BH 3,942,649
6B 3,942,651
3,942,652
8.5K 3,942,653
10.5R 3,942,654
15R 3,942,655
17DA 3,942,656
3,942,657
18R 3,942,658
3,942,659
83.3 3,942,661
140 3,942,662
313 3,942,663
505 3,942,664
516 3,942,665
518 3,942,666

CLASS 215

12R 3,942,667
31 3,942,660

CLASS 219

10.55B 3,943,317
10.55D 3,943,318
3,943,319
10.55E 3,943,320
69E 3,943,322
69M 3,943,321
69P Re.28,734
85 3,943,323
121L 3,943,324
208 3,943,325
241 3,943,326
261 3,943,327
335 3,943,328
367 3,943,329
381 3,943,330
499 3,943,331
520 3,943,332
532 3,943,333
544 3,943,334

CLASS 220

8 3,942,668
18 3,942,669
23.4 3,942,670
23.8 3,942,671
64 3,942,672
66 3,942,673
221 3,942,674
260 3,942,675
270 3,942,676
304 3,942,677
324 3,942,680
3,942,681
342 3,942,678
355 3,942,679

CLASS 221

58 3,942,682
229 3,942,683

CLASS 222

3 3,942,684
108 3,942,688
129.1 3,942,685
146HE 3,942,686
3,942,687
195 3,942,689
512 3,942,690

CLASS 224

1R 3,942,691
2B 3,942,692
28B 3,942,693

CLASS 225

100 3,942,694

CLASS 226

1 3,942,695
21 3,942,696
46 3,942,697
50 3,942,698

CLASS 227

3 3,942,699
8 3,942,700
90 3,942,701

CLASS 228

41 3,942,703
58 3,942,704
111 3,942,705
145 3,942,702
164 3,942,706

CLASS 229

2.5R 3,942,707
14BA 3,942,708
15 3,942,709
3,942,837
39R 3,942,710
3,942,711
51TC 3,942,712
62 3,942,713
73 3,942,714

CLASS 232

17 3,942,715

CLASS 233

1A 3,942,716
26 3,942,717

CLASS 235

61.11E 3,943,336
3,943,337
61.7B 3,943,335
92PL 3,943,338
92TC 3,943,339
94R 3,943,340
150.52 3,943,341
150.53 3,943,342
151.11 3,943,343
151.32 3,943,344
3,943,345
152 3,943,346
3,943,347
153AK 3,943,348
154 3,943,349
155 3,943,350

CLASS 236

78R 3,942,718

CLASS 237

12.3C 3,942,719

CLASS 238

4 3,942,720

CLASS 239

15 3,942,721
102 3,942,722
135 3,942,723
417 3,942,724
468 3,942,725
659 3,942,726

CLASS 240

7.1R 3,943,351
3,943,352
10R 3,943,353
26 3,943,354
147 3,943,355

CLASS 241

34 3,942,727
38 3,942,729
46.17 3,942,728
248 3,942,730

CLASS 242

18PW 3,942,731
19 3,942,732
35.5A 3,942,733
55.19A 3,942,734
56R 3,942,735
96 3,942,736
107.1 3,942,737
107.2 3,942,738
107.4A 3,942,739
107.4B 3,942,740
118.7 3,942,741
157R 3,942,742
192 3,942,743
199 3,942,744
201 3,942,745

CLASS 244

13 3,942,746
3,942,747
81 3,942,748
137R 3,942,749

CLASS 248

74PB 3,942,750
280 3,942,751
311R 3,942,752

CLASS 249

65 3,942,753
84 3,942,754
162 3,942,755

CLASS 250

199 3,943,357
3,943,358
201 3,943,359
210 3,943,360
236 3,943,361
256 3,943,362
288 3,943,363
303 3,943,364
390 3,943,365
406 3,943,356
505 3,943,366
551 3,943,367
568 3,943,369
573 3,943,368

CLASS 251

5 3,942,756
78 3,942,757
85 3,942,758
129 3,942,759
267 3,942,760

CLASS 252

8.55D 3,943,059
8.55R 3,943,060
60 3,943,061
301.1W 3,943,062
316 3,943,063
356 3,943,066
430 3,943,067
437 3,943,068
443 3,943,069
448 3,943,070
3,943,071
455R 3,943,064
3,943,072
500 3,943,065
519 3,943,168
522 3,942,761
3,943,073

CLASS 254

150R 3,942,762

CLASS 256

22 3,942,763
24 3,942,764

CLASS 259

4R 3,942,765
4 3,942,766
7 3,942,767
21 3,942,768
81R 3,942,769
95 3,942,770
107 3,942,771
148 3,942,772
191 3,942,773
3,942,774

CLASS 260

2.2R 3,943,074
2.5AJ 3,943,076
3,943,077
2.5AW 3,943,075
17R 3,943,078
17.4BB 3,943,079
20 3,943,080
23AR 3,943,082
23XA 3,943,081
29.6H 3,943,084
3,943,085
29.6S 3,943,083
29.7D 3,943,086
30.6R 3,943,087
3,943,088
33.6UA 3,943,089
37EP 3,943,090
3,943,092
37SB 3,943,091
42 3,943,093
42.21 3,943,094
45.7P 3,943,095
3,943,097
45.75E 3,943,099
45.5SN 3,943,098
45.85A 3,943,096
45.85B 3,943,102
45.85R 3,943,101
45.85T 3,943,100
47EN 3,943,104
47UA 3,943,103
47C 3,943,105
3,943,106
65 3,943,107
73R 3,943,108
77.5C 3,943,109
78A 3,943,110
78.4D 3,943,111
80.3R 3,943,112
80.71 3,943,113
85.5AM 3,943,114
87.3 3,943,115
93.1 3,943,116
97.5 3,943,117
3,943,118
112.5R 3,943,119
152 3,943,120
158 3,943,121
169 3,943,122
239A 3,943,123
239.55R 3,943,124
240D 3,943,125
243C 3,943,126
3,943,127
3,943,128
3,943,129
3,943,130
247.5R 3,943,132
248CS 3,943,133
251R 3,943,134
268PL 3,943,135
272 3,943,136
279R 3,943,137
293.89 3,943,139
295.5B 3,943,141
295.5R 3,943,140
298 3,943,142
299 3,943,143
302E 3,943,144
308A 3,943,145
309.2 3,943,146
309.6 3,943,147
326.5B 3,943,148
340.5 3,943,149
340.7 3,943,150
343.2R 3,943,151
345.1 3,943,152
348R 3,943,153
397.6 3,943,154
424 3,943,155
448.2N 3,943,156
448.8R 3,943,157
453A 3,943,158
453P 3,943,159
458 3,943,160
465E 3,943,162
465K 3,943,161
470 3,943,163
475P 3,943,164
483 3,943,257
484P 3,943,165
499 3,943,166
513B 3,943,174
514H 3,943,167
521R 3,943,169
543P 3,943,170
561N 3,943,171
570.5P 3,943,172
570.6 3,943,173
581 3,943,175
586R 3,943,176
593R 3,943,177
615B 3,943,178
621G 3,943,179
622R 3,943,180
631R 3,943,181
674SA 3,943,182
3,943,183
3,943,184
680E 3,943,185
683D 3,943,186
837R 3,943,187
847 3,943,188
860 3,943,189
874 3,943,195
876R 3,943,190
3,943,191
890 3,943,192
3,943,193
897B 3,943,194
926 3,943,196
3,943,197
929 3,943,198
930 3,943,199
932 3,943,200
941 3,943,201
950 3,943,202
954 3,943,203
990 3,943,204

CLASS 261

30 3,943,205
39B 3,943,206
44A 3,943,207
142 3,943,221

CLASS 264

.5 3,943,210
3B 3,943,209
3R 3,943,208
15 3,943,211
24 3,943,212

29 3,943,213
40 3,943,214
46.6 3,943,215
56 3,943,216
61 3,943,217
81 3,943,218
97 3,943,219
103 3,943,220
147 3,943,222
182 3,943,223
209 3,943,224
219 Re.28,733
255 3,943,225
290T 3,943,138

CLASS 266

34T 3,942,775

CLASS 267

97 3,942,776
102 3,942,777

CLASS 269

26 3,942,778
41 3,942,779
47 3,942,780
289R 3,942,781

CLASS 270

6 3,942,782
30 3,942,783

CLASS 271

64 3,942,784
65 3,942,785
177 3,942,786
237 3,942,787
250 3,942,788
274 3,942,789

CLASS 272

79R 3,942,790
83R 3,942,791

CLASS 273

19 3,942,792
26E 3,942,794
26R 3,942,793
30 3,942,795
55R 3,942,796
97R 3,942,797
103 3,942,798
134AD 3,942,799
135AB 3,942,800
176AB 3,942,801
186C 3,942,802

CLASS 277

53 3,942,803
58 3,942,804
75 3,942,805
165 3,942,806
180 3,942,807
197 3,942,808

CLASS 280

11.35K 3,942,810
11.35R 3,942,809
11.35T 3,942,811
28 3,942,812
47.13R 3,942,813
76.2R 3,942,815
79.1 3,942,814
96.2R 3,942,816
106R 3,942,817
150SB 3,942,819
3,942,820
150R 3,942,818
277 3,942,821
289 3,942,822
423R 3,942,823

CLASS 285

45 3,942,824
132 3,942,825
178 3,942,826

CLASS 290

1R 3,943,370
40B 3,943,371
40R 3,943,372
3,943,373
52 3,943,374

CLASS 292

201 3,942,828
316 3,942,829

CLASS 294

55 3,942,831
3,942,832
86.18 3,942,833
110R 3,942,834

CLASS 296

105 3,942,830

CLASS 297

61 3,942,835
445 3,942,836

CLASS 299

91 3,942,838

CLASS 301

73 3,942,839

CLASS 302

3 3,942,840
14 3,942,841
62 3,942,842

CLASS 303

21AF 3,942,844
21CH 3,942,845
21F 3,942,843

CLASS 307

116 3,943,376
141 3,943,375
205 3,943,377
224C 3,943,378
225R 3,943,379
233R 3,943,382
235T 3,943,380
247A 3,943,381
261 3,943,383
273 3,943,384
293 3,943,385
310 3,943,386

CLASS 308

6C 3,942,846
9 3,942,847
159 3,942,848
187.1 3,942,849
238 3,942,850

CLASS 310

8 3,943,387
8.2 3,943,388
9.5 3,943,389
15 3,943,390
103 3,943,391
215 3,943,392

CLASS 312

120 3,942,851
294 3,942,852
296 3,942,853

CLASS 313

60 3,943,393
201 3,943,394
273 3,943,395
311 3,943,396
341 3,943,398
404 3,943,399
468 3,943,400

CLASS 315

39 3,943,401
3,943,402
3,943,403
3,943,404
209CD 3,943,405
241P 3,943,406
317 3,943,397

CLASS 317

4 3,943,407
13R 3,943,408
18R 3,943,409
31 3,943,410
33SC 3,943,419
33R 3,943,411
99 3,943,412
107 3,943,413
122 3,943,414
141S 3,943,415
154 3,943,416
249R 3,943,417
262A 3,943,418

CLASS 318

139 3,943,420
484 3,943,421
568 3,943,422

CLASS 320

22 3,943,423
64 3,943,424

CLASS 321

2 3,943,425
8C 3,943,426
11 3,943,427
15 3,943,428
26 3,943,429
45C 3,943,430

CLASS 323

1 3,943,431
7 3,943,432
44R 3,943,433
69 3,943,434
76 3,943,435

CLASS 324

8 3,943,436
32 3,943,437
54 3,943,438
60C 3,943,439
95 3,943,440
110 3,943,441
158R 3,943,442
163 3,943,443

CLASS 325

25 3,943,444
115 3,943,445
144 3,943,446
308 3,943,447
321 3,943,448
420 3,943,449
446 3,943,450
464 3,943,451

CLASS 328

71 3,943,452
123 3,943,453
133 3,943,454
155 3,943,455
185 3,943,456

CLASS 330

4.3 3,943,457
42 3,943,458

CLASS 331

4 3,943,459
16 3,943,460
94.5C 3,943,461
94.5H 3,943,462
107R 3,943,463

CLASS 332

7.51 3,943,464
44 3,943,465

CLASS 333

14 3,943,466
17L 3,943,467
18 3,943,468
84M 3,943,469
97R 3,943,470

CLASS 334

59 3,943,471

CLASS 335

16 3,943,472
3,943,473
151 3,943,474
161 3,943,475
239 3,943,476

CLASS 337

57 3,943,477
347 3,943,478
3,943,479
371 3,943,480

CLASS 338

32R 3,943,481

CLASS 339

17CF 3,942,854
21R 3,942,855
74R 3,942,856
75R 3,942,857
3,942,858
113L 3,942,859
217S 3,942,860

CLASS 340

3R 3,943,482
7PC 3,943,483
7R 3,943,484
52A 3,943,486
146.2 3,943,487
146.3AG 3,943,490
147SY 3,943,489
147C 3,943,488
171R 3,943,491
172.5 3,943,492
3,943,493
3,943,494
3,943,495
173DR 3,943,496
174TF 3,943,497
206 3,943,498
227R 3,943,499
253R 3,943,500
3,943,501
3,943,502
258B 3,943,503
271 3,943,504
274R 3,943,485
323R 3,943,505
347NT 3,943,506
384E 3,943,507

CLASS 343

5R 3,943,508
6.5R 3,943,509
7A 3,943,510
3,943,511
7.4 3,943,512
7.7 3,943,513
16R 3,943,514
18E 3,943,515
3,943,516
100PE 3,943,517
108M 3,943,518
176 3,943,519
708 3,943,520
786 3,943,521
797 3,943,522
854 3,943,523
888 3,943,524

CLASS 346

1 3,943,525
25 3,943,526
33F 3,943,527
74E 3,943,528
108 3,943,529
136 3,943,530

CLASS 350

3.5 3,942,861
16 3,942,862
62 3,942,863
65 3,942,864
83 3,942,865
96GN 3,942,867
96B 3,942,866
117 3,942,868
3,942,869
150 3,942,870
3,942,871
160LC 3,942,872
162R 3,942,873
184 3,942,874
214 3,942,875
215 3,942,876
220 3,942,877
274 3,942,878
285 3,942,879
310 3,942,880
319 3,942,881

CLASS 352

14 3,942,882
166 3,942,883

CLASS 353

9 3,942,884
27R 3,942,885

CLASS 354

76 3,943,531
126 3,943,532
156 3,943,533
173 3,943,534
174 3,943,535
204 3,943,536
288 3,943,537
294 3,943,538
302 3,943,539
318 3,943,540
3,943,541

CLASS 355

1 3,942,886
3R 3,942,887
3,942,888
15 3,942,889

CLASS 356

4 3,942,890
43 3,942,891
86 3,942,892
96 3,942,893
153 3,942,894
169 3,942,895
171 3,942,896
197 3,942,897
202 3,942,898
234 3,942,899
237 3,942,900
251 3,942,901

CLASS 357

15 3,943,552
23 3,943,542
24 3,943,543
3,943,544
3,943,545
28 3,943,553
34 3,943,554
36 3,943,546
38 3,943,547
3,943,548
3,943,549
3,943,550
42 3,943,551
49 3,943,555
74 3,943,556
75 3,943,557

CLASS 358

1 3,943,558
6 3,943,559
27 3,943,560
81 3,943,561

CLASS 360

10 3,943,562
35 3,943,563
55 3,943,564
70 3,943,565
71 3,943,566
93 3,943,567
106 3,943,568
109 3,943,569
112 3,943,570

CLASS 401

45 3,942,902
108 3,942,903

CLASS 403

108 3,942,904

CLASS 408

204 3,942,905

CLASS 415

53T 3,942,906
126 3,942,907
199A 3,942,908

CLASS 416

132B 3,942,909
141 3,942,910
157A 3,942,911

CLASS 417

53 3,942,912
273 3,942,913
289 3,942,914
360 3,942,915
568 3,942,916

CLASS 418

60 3,942,917
61A 3,942,918
83 3,942,919
230 3,942,920

CLASS 423

3,943,226
232 3,943,227
237 3,943,228
240 3,943,229
242 3,943,230
311 3,943,231
317 3,943,232
332 3,943,233
410 3,943,235
415R 3,943,236
542 3,943,237

CLASS 424

37 3,943,238
43 3,943,239
49 3,943,240
54 3,943,241
65 3,943,242
76 3,943,243
95 3,943,244
101 3,943,245
177 3,943,246
180 3,943,247
196 3,943,248
202 3,943,249
246 3,943,131
249 3,943,250
258 3,943,251
319 3,943,253
321 3,943,254
329 3,943,255
342 3,943,256
343 3,943,234

CLASS 425

4C 3,942,921
30 3,942,922
64 3,942,923
110 3,942,924
115 3,942,925
126R 3,942,926
135 3,942,927
138 3,942,928
143 3,942,929
222 3,942,930
304 3,942,931
324B 3,942,932
324R 3,942,933
342 3,942,934
393 3,942,935
447 3,942,936
461 3,942,937

CLASS 426

3 3,943,258
24 3,943,259
67 3,943,261
250 3,943,262
3,943,263
330.2 3,943,264
535 3,943,260
576 3,943,265
656 3,943,266

CLASS 427

2 3,943,267
17 3,943,268
302 3,943,269
310 3,943,270

CLASS 428

262 3,943,252

CLASS 431

3 3,942,938
215 3,942,939
291 3,942,940

CLASS 433

29 3,942,941
80 3,942,942
121 3,942,943
132 3,942,944
222 3,942,945

D6—	7	239,088		248	239,089	D9—	180	239,087		147	239,103	D26—	R	239,118	D54—	13A	239,131
	27	239,071	D7—	62	239,074	D10—	6	239,090		169	239,104		13	239,119	D55—	1R	239,132
	28	239,070		128	239,075		15	239,091		205	239,105		14K	239,117			239,133
	85	239,072	D8—	5	239,080		17	239,092	D19—	3	239,111	D32—	1A	239,120	D56—	4B	239,134
	97	239,069		27	239,081		71	239,093		45	239,112	D34—	5CB	239,121		D	239,135
	102	239,068		30	239,077	D12—	31	239,094		62	239,106		GT	239,123	D57—	1E	239,136
	157	239,061		108	239,078		53	239,095			239,107		SH	239,122	D59—	2A	239,137
	166	239,062			239,083		54	239,096			239,108		14D	239,124	D61—	1F	239,139
		239,063		114	239,079		60	239,097			239,109		15AJ	239,125		Q	239,138
		239,064		216	239,085		65	239,098			239,110			239,127	D63—		239,140
		239,065		229	239,082		71	239,099	D22—	1	239,113		SE	239,126	D83—	J	239,142
		239,066		266	239,086		96	239,100		8	239,114	D35—	1	239,128			239,143
		239,067		272	239,076		100	239,101	D23—	35	239,115		3R	239,129		12R	239,141
	196	239,073			239,084		143	239,102	D24—	1D	239,116	D48—	2	239,130	D95—	3	239,144

CLASSIFICATION OF PLANTS

P. —	5	3,837	P. —	20	3,838	P. —	28	3,840	P. —	50	3,839	P. —	68	3,836

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama 1
Alaska 2
American Samoa 3
Arizona 4
Arkansas 5
California 6
Canal Zone 7
Colorado 8
Connecticut 9
Delaware 10
District of Columbia 11
Florida 12
Georgia 13
Guam 14
Hawaii 15
Idaho 16
Illinois 17
Indiana 18
Iowa 19
Kansas 20
Kentucky 21
Louisiana 22
Maine 23
Maryland 24
Massachusetts 25
Michigan 26
Minnesota 27
Mississippi 28
Missouri 29
Montana 30
Nebraska 31
Nevada 32
New Hampshire 33
New Jersey 34
New Mexico 35
New York 36
North Carolina 37
North Dakota 38
Ohio 39
Oklahoma 40
Oregon 41
Pennsylvania 42
Puerto Rico 43
Rhode Island 44
South Carolina 45
South Dakota 46
Tennessee 47
Texas 48
Utah 49
Vermont 50
Virginia 51
Virgin Islands 52
Washington 53
West Virginia 54
Wisconsin 55
Wyoming 56
U.S. Air Force 57
U.S. Army 58
U.S. Navy 59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 3,942,193
3,942,319
3,942,443
3,942,732
3,942,842
3,943,414
2 : 3,942,572
4 : 3,942,257
3,942,472
3,942,477
3,942,488
3,942,779
3,942,864
3,943,268
3,943,378
3,943,389
3,943,513
3,943,556
5 : 3,942,476
3,942,542
6 : 3,942,195
3,942,201
3,942,227
3,942,228
3,942,234
3,942,243
3,942,249
3,942,258
3,942,273
3,942,281
3,942,294
3,942,353
3,942,356
3,942,374
3,942,381
3,942,392
3,942,398
3,942,405
3,942,408
3,942,409
3,942,444
3,942,447
3,942,461
3,942,478
3,942,479
3,942,500
3,942,509
3,942,511
3,942,514
3,942,519
3,942,524
3,942,535
3,942,540
3,942,543
3,942,550
3,942,553
3,942,554
3,942,570
3,942,576
3,942,590
3,942,601
3,942,641
3,942,646
3,942,652
3,942,671
3,942,716
3,942,717
3,942,735
3,942,736
3,942,747
3,942,748
3,942,753
3,942,756
3,942,758
3,942,778
3,942,788
3,942,797
3,942,822
3,942,823
3,942,831
3,942,840
3,942,856
3,942,861
3,942,878
3,942,884
3,942,885
3,942,893
3,942,898
3,942,909
3,942,913
3,942,963
3,942,976
3,943,020
3,943,039
3,943,051
3,943,078
3,943,084
3,943,157
3,943,188
3,943,210
3,943,267
3,943,269
3,943,278
3,943,279
3,943,281
3,943,282
3,943,284
3,943,290
3,943,294
3,943,313
3,943,339
3,943,364
3,943,368
3,943,376
3,943,415
3,943,439
3,943,440
3,943,442
3,943,448
3,943,454
3,943,463
3,943,490
3,943,495
3,943,496
3,943,508
3,943,510
3,943,511
3,943,515
3,943,516
3,943,526
3,943,554
3,943,564
8 : 3,942,328
3,942,329
3,942,376
3,942,651
3,942,707
3,942,765
3,942,802
3,942,924
3,943,289
3,943,296
3,943,407
3,943,566
9 : Re.28,730
3,942,225
3,942,230
3,942,255
3,942,279
3,942,387
3,942,411
3,942,420
3,942,436
3,942,525
3,942,616
3,942,667
3,942,718
3,942,724
3,942,738
3,942,757
3,942,781
3,942,899
3,942,937
3,942,952
3,942,991
3,943,006
3,943,103
3,943,175
3,943,214
3,943,287
3,943,340
3,943,393
3,943,464
10 : 3,942,224
3,942,271
3,942,679
3,943,095
3,943,163
3,943,168
3,943,187
3,943,201
3,943,265
3,943,531
11 : 3,942,198
3,942,446
3,943,357
12 : 3,942,464
3,942,481
3,942,619
3,942,660
3,942,829
3,942,830
3,942,839
3,943,248
3,943,277
3,943,285
3,943,327
3,943,482
13 : 3,942,277
3,942,283
3,942,410
3,942,598
3,942,865
3,942,903
3,942,941
3,943,211
3,943,261
16 : 3,943,062
17 : 3,942,220
3,942,221
3,942,222
3,942,247
3,942,254
3,942,280
3,942,355
3,942,379
3,942,402
3,942,426
3,942,454
3,942,471
3,942,501
3,942,515
3,942,544
3,942,555
3,942,575
3,942,594
3,942,597
3,942,604
3,942,624
3,942,649
3,942,673
3,942,675
3,942,684
3,942,685
3,942,725
3,942,782
3,942,783
3,942,860
3,942,877
3,942,921
3,942,972
3,942,980
3,943,064
3,943,070
3,943,071
3,943,171
3,943,182
3,943,183
3,943,184
3,943,212
3,943,245
3,943,255
3,943,256
3,943,263
3,943,264
3,943,276
3,943,332
3,943,333
3,943,356
3,943,399
3,943,408
3,943,412
3,943,416
3,943,417
3,943,424
3,943,438
3,943,449
3,943,458
3,943,475
3,943,521
3,943,525
3,943,553
18 : 3,942,286
3,942,390
3,942,400
3,942,414
3,942,445
3,942,608
3,942,611
3,942,654
3,942,784
3,942,818
3,942,849
3,943,022
3,943,050
3,943,101
3,943,126
19 : 3,942,275
3,942,334
3,942,375
3,942,850
3,943,316
3,943,472
3,943,473
20 : 3,942,191
3,942,520
3,942,602
3,942,796
3,943,137
21 : 3,942,265
3,942,341
3,942,591
3,942,626
3,942,763
3,942,777
3,942,853

3,942,964
3,943,053
3,943,392
3,943,409
22 : 3,942,681
3,943,174
23 : 3,942,203
3,942,655
24 : 3,942,463
3,942,536
3,942,539
3,942,574
3,942,585
3,942,629
3,942,699
3,942,710
3,942,792
3,942,801
3,943,003
3,943,196
3,943,197
3,943,216
3,943,310
3,943,423
3,943,446
3,943,455
3,943,520
3,943,561
25 : 3,942,268
3,942,327
3,942,365
3,942,380
3,942,516
3,942,533
3,942,549
3,942,563
3,942,638
3,942,639
3,942,669
3,942,692
3,942,701
3,942,741
3,942,773
3,942,774
3,942,880
3,942,896
3,943,011
3,943,031
3,943,151
3,943,154
3,943,166
3,943,207
3,943,315
3,943,320
3,943,324
3,943,360
3,943,375
3,943,388
3,943,401
3,943,402
3,943,403
3,943,404
3,943,451
3,943,499
3,943,523
26 : 3,942,210
3,942,211
3,942,235
3,942,321
3,942,331
3,942,338
3,942,363
3,942,369
3,942,385
3,942,406
3,942,417
3,942,419
3,942,427
3,942,430
3,942,431
3,942,490
3,942,504
3,942,545
3,942,600
3,942,605
3,942,614
3,942,663
3,942,689
3,942,691
3,942,712

3,942,764
3,942,795
3,942,808
3,942,812
3,942,826
3,942,836
3,942,905
3,942,915
3,942,953
3,943,026
3,943,176
3,943,206
3,943,514
27 : 3,942,218
3,942,219
3,942,236
3,942,269
3,942,285
3,942,296
3,942,452
3,942,505
3,942,620
3,942,633
3,942,637
3,942,666
3,942,687
3,942,985
3,943,008
3,943,146
3,943,241
3,943,305
29 : 3,942,213
3,942,368
3,942,418
3,942,521
3,942,688
3,942,720
3,942,761
3,942,793
3,943,301
3,943,507
31 : 3,942,715
32 : 3,942,752
33 : 3,942,693
3,942,838
3,943,395
3,943,441
34 : Re.28,732
3,942,242
3,942,308
3,942,316
3,942,339
3,942,344
3,942,378
3,942,458
3,942,467
3,942,482
3,942,484
3,942,513
3,942,527
3,942,532
3,942,537
3,942,588
3,942,813
3,942,835
3,942,869
3,942,900
3,942,918
3,942,931
3,942,935
3,942,950
3,942,962
3,942,998
3,943,018
3,943,023
3,943,048
3,943,052
3,943,081
3,943,123
3,943,147
3,943,149
3,943,153
3,943,165
3,943,199
3,943,209
3,943,220
3,943,229
3,943,233
3,943,235
3,943,240

3,943,242
3,943,253
3,943,257
3,943,271
3,943,275
3,943,295
3,943,302
3,943,329
3,943,347
3,943,379
3,943,380
3,943,468
3,943,469
3,943,485
3,943,491
3,943,501
3,943,502
3,943,512
3,943,517
3,943,522
3,943,527
3,943,529
3,943,532
3,943,551
3,943,555
3,943,563
35 : 3,942,320
3,942,618
3,942,894
3,942,936
3,943,352
36 : 3,942,199
3,942,206
3,942,215
3,942,238
3,942,252
3,942,270
3,942,272
3,942,284
3,942,349
3,942,403
3,942,416
3,942,424
3,942,432
3,942,473
3,942,474
3,942,499
3,942,507
3,942,510
3,942,523
3,942,526
3,942,558
3,942,581
3,942,615
3,942,621
3,942,631
3,942,632
3,942,634
3,942,645
3,942,670
3,942,680
3,942,706
3,942,713
3,942,714
3,942,750
3,942,785
3,942,790
3,942,791
3,942,799
3,942,800
3,942,804
3,942,817
3,942,851
3,942,852
3,942,859
3,942,870
3,942,871
3,942,872
3,942,887
3,942,888
3,942,891
3,942,895
3,942,908
3,942,932
3,942,940
3,942,947
3,942,979
3,942,987
3,942,992
3,943,000
3,943,010
3,943,013

3,943,015
3,943,016
3,943,024
3,943,042
3,943,049
3,943,085
3,943,100
3,943,102
3,943,107
3,943,108
3,943,113
3,943,133
3,943,142
3,943,156
3,943,191
3,943,198
3,943,200
3,943,225
3,943,251
3,943,258
3,943,266
3,943,283
3,943,297
3,943,298
3,943,312
3,943,323
3,943,350
3,943,369
3,943,383
3,943,428
3,943,456
3,943,459
3,943,494
3,943,524
3,943,528
3,943,539
3,943,542
3,943,557
37 : 3,942,251
3,942,455
3,942,552
3,942,776
3,942,926
3,943,004
3,943,413
3,943,498
39 : 3,942,216
3,942,217
3,942,231
3,942,306
3,942,330
3,942,333
3,942,354
3,942,413
3,942,415
3,942,423
3,942,435
3,942,451
3,942,457
3,942,512
3,942,518
3,942,556
3,942,567
3,942,571
3,942,573
3,942,653
3,942,656
3,942,661
3,942,672
3,942,754
3,942,825
3,942,922
3,942,988
3,942,989
3,943,040
3,943,044
3,943,046
3,943,076
3,943,077
3,943,079
3,943,088
3,943,114
3,943,116
3,943,125
3,943,155
3,943,234
3,943,243
3,943,244
3,943,259
3,943,272
3,943,335

3,943,394
3,943,471
3,943,478
3,943,480
40 : 3,942,208
3,942,480
3,942,546
3,942,609
3,942,841
3,943,068
3,943,164
3,943,410
41 : 3,942,362
3,942,648
3,943,361
42 : 3,942,305
3,942,314
3,942,351
3,942,383
3,942,399
3,942,412
3,942,441
3,942,470
3,942,578
3,942,640
3,942,704
3,942,711
3,942,775
3,942,845
3,942,854
3,942,969
3,942,973
3,942,977
3,943,002
3,943,032
3,943,047
3,943,060
3,943,065
3,943,080
3,943,083
3,943,110
3,943,112
3,943,127
3,943,128
3,943,129
3,943,131
3,943,143
3,943,148
3,943,173
3,943,232
3,943,254
3,943,288
3,943,314
3,943,328
3,943,346
3,943,354
3,943,371
3,943,372
3,943,373
3,943,452
3,943,488
3,943,493
3,943,504
44 : 3,942,970
3,942,974
45 : 3,942,342
3,942,343
3,942,832
3,943,027
3,943,117
3,943,336
47 : 3,942,364
3,942,923
3,943,001
3,943,017
3,943,021
3,943,028
3,943,121
3,943,189
3,943,213
3,943,470
48 : 3,942,200
3,942,204
3,942,233
3,942,248
3,942,262
3,942,289
3,942,325
3,942,373
3,942,425

3,942,449
3,942,551
3,942,560
3,942,592
3,942,593
3,942,596
3,942,606
3,942,625
3,942,662
3,942,674
3,942,705
3,942,742
3,942,746
3,942,772
3,942,789
3,942,794
3,942,824
3,942,833
3,942,879
3,942,910
3,942,912
3,943,059
3,943,104
3,943,160
3,943,162
3,943,185
3,943,227
3,943,355
3,943,362
3,943,436
3,943,483
3,943,484
3,943,543
3,943,544
49 : 3,942,528
3,942,730
3,943,397
51 : 3,942,192
3,942,332
3,942,347
3,942,396
3,942,623
3,942,734
3,942,798
3,942,890
3,943,105
3,943,367
3,943,382
3,943,435
3,943,447
3,943,457
3,943,474
3,943,560
53 : 3,942,209
3,942,232
3,942,337
3,942,486
3,942,904
3,942,975
3,943,025
3,943,204
54 : 3,942,293
3,942,881
3,943,082
3,943,236
55 : 3,942,194
3,942,282
3,942,290
3,942,302
3,942,304
3,942,367
3,942,394
3,942,421
3,942,429
3,942,489
3,942,647
3,942,668
3,942,709
3,942,723
3,942,737
3,942,837
3,942,943
3,943,009
3,943,054
3,943,249
3,943,492
56 : 3,942,622
3,942,751

4	239,118		239,117	16	239,100	26	239,106		239,089	39	239,088
6	239,068		239,121	17	239,092		239,107		239,099		239,090
	239,069		239,124		239,111		239,108		239,120		239,132
	239,070		239,127	18	239,082		239,109	36	239,061		239,137
	239,077		239,133	19	239,078		239,110		239,071	42	239,062
	239,080		239,141	20	239,114	29	239,087		239,073		239,096
	239,094	9	239,084		239,115	34	239,063		239,086		239,097
	239,098		239,085		239,123		239,064		239,128		239,119
	239,101		239,112	22	239,075		239,065		239,131	48	239,095
	239,104		239,113	25	239,072		239,066		239,138		239,130
	239,105		239,126		239,081		239,067		239,142		239,140
	239,116	12	239,093		239,103		239,074		239,143	53	239,083

PLANT PATENTS

6	3,837	3,838	3,840		

U. S. GOVERNMENT PRINTING OFFICE : O - 1976

U.S. DEPARTMENT OF COMMERCE
Elliot L. Richardson, Secretary

PATENT AND TRADEMARK OFFICE
C. Marshall Dann, *Commissioner*